



11/24/04

C of C  
Patent

Attorney Docket: 728256-100119

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: )  
 )  
Maglica, Anthony )  
 )  
Serial No.: 09/932,443 )  
 )  
Filed: August 16, 2001 )  
 )  
For: FLASHLIGHT AND )  
COMBINATION FOR USE IN ALIGNING )  
FLASHLIGHT LAMP BULBS )

Group Art Unit: 2875  
Examiner: Negron, Ismael  
Issued Patent No.: 6,722,772

**REQUEST FOR CERTIFICATE OF CORRECTION UNDER 37 C.F.R. 1.322**

Attn: Certificate of Correction Branch  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Certificate  
DEC 01 2004  
of Correction

Sir:

Enclosed herewith is a Certificate of Correction form PTO/SB/44 (7 pages submitted in duplicate) correcting errors in U.S. Patent No. 6,722,772, which issued on April 20, 2004.

Applicant believes that all of the corrections are for errors substantially due to a mistake by the U.S. Patent and Trademark Office ("USPTO"). The error, for which the Applicant is seeking a correction, is the omission of references in the "References Cited" section of the issued patent.

All of the omitted references were cited in an Information Disclosure Statement ("IDS"), which was mailed by Applicant on November 21, 2001 and received by the USPTO on November 29, 2001. Applicant requests that, in light of the nature of the mistakes, the Commissioner issue a Certificate of Correction under 37 C.F.R. 1.322(b).

CERTIFICATE OF MAILING  
(37 C.F.R. § 1.8a)

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as First Class Mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

November 22, 2004  
Date of Deposit

CAROLE COOPER  
Name of Person Mailing Paper  
Carole Cooper  
Signature of Person Mailing Document

DEC 06 2004

On August 16, 2001, Applicant filed the above-identified patent application. On November 21, 2001, Applicant mailed an IDS, accompanied by form PTO-1449 listing seventy-five (75) U.S. Patent Documents and twelve (12) Foreign Patent Documents, copies of the listed references, and a return postcard to confirm receipt by the USPTO. The IDS and accompanying documents were timely submitted under 37 CFR § 1.97(b) before the mailing of a first Office Action on the merits. A copy of the IDS, form PTO-1449 and the return postcard is attached herewith as Exhibit A.

Based on the information currently available to the Applicant, USPTO was in receipt of Applicant's IDS, mailed November 21, 2001. Applicant received the return postcard bearing a USPTO date stamp of November 29, 2001, indicating receipt by the USPTO of the IDS with PTO-1449 and copies of the cited references. See Exhibit A. Consistent with this, the Patent Application Information Retrieval ("PAIR") system also shows that an IDS was filed on November 29, 2001, the same date that was stamped on the return postcard. A copy of the web page printout for U.S. Pat. No. 6,722,772 from PAIR is attached herewith as Exhibit B.

On April 20, 2004, the application issued into U.S. Patent No. 6,722,772. Notwithstanding Applicant's timely submission of its first IDS and the indication from the USPTO of its receipt, the "References Cited" section of the issued patent listed only: (1) the references cited by Examiner in the Notice of References Cited (PTO-892), which was mailed on December 18, 2002, and (2) the references cited in Applicant's second IDS, which was mailed on September 17, 2003 and received and filed by the USPTO on September 22, 2003. The "References Cited" section of the issued patent omitted all of the references cited in Applicant's first IDS, filed on November 29, 2001. A copy of the "References Cited" section of U.S. Pat. No. 6,722,772 is attached herewith as Exhibit C.


On June 15, 2004, Applicant's attorney, Charles Wong, spoke with and advised Examiner Ismael Negron of this error. Examiner Negron suggested that a copy of the November 29, 2001 IDS be faxed to him. A copy of the letter to Examiner Negron dated June 15, 2004 is attached herewith as Exhibit D.

Again, on June 24, 2004, Applicant's attorney, Charles Wong, spoke to Examiner Negron. Examiner Negron advised that he was unable to locate the November 29, 2001 IDS after examining the contents of the file. To remedy this situation, Examiner Negron advised that Applicant should file a certificate of correction and to include the foreign references cited in the November 29, 2001 IDS for his convenience.

Applicant believes that the errors leading to the publication of U.S. Patent No. 6,722,772, omitting the references cited in Applicant's IDS of November 29, 2001, are attributable to the USPTO. Hence, Applicant has brought this petition under 37 C.F.R. 1.322 and requests that, in light of the nature of the mistakes, the Commissioner issue a Certificate of Correction under 37 C.F.R. 1.322(b).

Respectfully submitted,  
JONES DAY

Dated: November 22, 2004

By:   
Eric J. Moore  
Reg. No. 54,321

555 West Fifth Street, Suite 4600  
Los Angeles, California 90013-1025  
Telephone: (213) 489-3939  
Facsimile: (213) 243-2539

Enclosures: 7 sheets of form PTO/SB/44  
A copy of the IDS, the transmittal of missing parts, form PTO-1449 and the return postcard mailed November 21, 2001  
A copy of the web page printout for U.S. Pat. No. 6,722,772 from PAIR  
A copy of the "References Cited" section of U.S. Pat. No. 6,722,772  
A copy of the letter to Examiner Negron dated June 15, 2004  
A copy of the foreign references cited in the November 29, 2001 IDS  
Return Postcard

DEC 06 2004

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,722,772 *B2*

DATED : April 20, 2004

Page 1 of 7

INVENTOR(S) : Anthony Maglica

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the References Cited, U.S. Patent Documents section, add:

--		
1,584,539	5/1926	Hopkins.....362/188
1,603,272	10/1926	Eaton
1,608,195	11/1926	Barany
1,638,716	8/1927	Surles
1,644,126	10/1927	Harris
1,674,650	11/1926	Leser
1,680,169	3/1928	Osean .....362/188
1,758,835	5/1930	Hime
1,851,503	3/1932	Flamm.....240
2,016,819	10/1935	Meginniss.....362/188
2,097,222	10/1937	Tompkins .....362/187
2,173,650	9/1939	Fullmer.....240/10.66
2,176,301	10/1939	Haas .....123/187
2,212,103	8/1940	Rothenberg et al .....240/10.69

MAILING ADDRESS OF SENDER:

PATENT NO. 6,722,772

Jones Day  
555 West 5<sup>th</sup> Street, 46<sup>th</sup> Floor  
Los Angeles, CA 90013-1025  
(213) 489-3939

No. of additional copies



This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,722,772 **B2**

DATED : April 20, 2004

Page 2 of 7

INVENTOR(S) : Anthony Maglica

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

2,272,907	2/1942	Deibel.....	240/10.61
2,339,356	1/1944	Sachs.....	362/187
2,490,830	2/1949	Norton.....	362/184
2,530,913	11/1950	Shackel.....	123/187
2,599,295	6/1952	Thomas.....	362/205
2,915,621	12/1959	Garland.....	362/205
2,931,005	3/1960	Saurwein.....	362/205
2,945,944	7/1960	Gillespie.....	362/188
3,014,125	12/1961	Draudt.....	240/10.68
3,076,891	2/1963	Moore.....	362/202
3,652,846	3/1972	Starch, II.....	240/10.63
4,114,187	9/1978	Uke.....	362/158
4,151,583	4/1979	Miller.....	362/207
4,156,271	5/1979	Vercellotti.....	362/202

MAILING ADDRESS OF SENDER:

PATENT NO. 6,722,772

Jones Day  
555 West 5<sup>th</sup> Street, 46<sup>th</sup> Floor  
Los Angeles, CA 90013-1025  
(213) 489-3939

No. of additional copies



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*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,722,772 **B2**

DATED : April 20, 2004

Page 3 of 7

INVENTOR(S) : Anthony Maglica

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

4,171,534	10/1979	Strowe.....	362/183
4,203,150	5/1980	Shamlan.....	362/183
4,234,913	11/1980	Ramme .....	362/158
4,261,026	4/1981	Bolha .....	362/101
4,286,311	8/1981	Maglica .....	362/205
4,329,740	5/1982	Colvin.....	362/184
4,388,673	6/1983	Maglica .....	362/205
4,398,232	8/1983	Elmore .....	362/187
4,398,238	8/1983	Nelson.....	362/184
4,429,351	1/1984	Petzl.....	362/187
4,472,766	9/1984	Hung .....	362/205
4,495,551	1/1985	Foltz.....	362/205
4,527,223	7/1985	Maglica .....	362/207
4,531,178	7/1985	Uke .....	362/202

MAILING ADDRESS OF SENDER:

PATENT NO. 6,722,772

Jones Day  
555 West 5<sup>th</sup> Street, 46<sup>th</sup> Floor  
Los Angeles, CA 90013-1025  
(213) 489-3939

No. of additional copies



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DEC 06 2004

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,722,772 *B2*  
DATED : April 20, 2004  
INVENTOR(S) : Anthony Maglica

Page 4 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

4,570,208	2/1986	Sassmannshausen .362/188
4,577,263	3/1986	Maglica .....362/187
4,581,686	4/1986	Nelson.....362/204
4,644,220	2/1987	Carley .....313/318
4,656,565	4/1987	Maglica .....362/187
4,658,336	4/1987	Maglica .....362/187
4,695,551	9/1987	Samhaber et al. ....435/292
4,725,932	2/1988	Gammache .....362/202
4,733,337	3/1988	Bieberstein.....362/206
4,777,582	10/1985	Sharrah .....362/202
4,819,141	4/1989	Maglica et al.....362/207
4,841,417	6/1989	Maglica et al.....362/206
4,843,526	6/1989	Price, III.....362/187
4,864,474	9/1989	Maglica .....362/203

MAILING ADDRESS OF SENDER:

PATENT NO. 6,722,772

Jones Day  
555 West 5<sup>th</sup> Street, 46<sup>th</sup> Floor  
Los Angeles, CA 90013-1025  
(213) 489-3939

No. of additional copies



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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,722,772 *B2*  
 DATED : April 20, 2004  
 INVENTOR(S) : Anthony Maglica

Page 5 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

4,888,670	12/1989	Sharrah .....	362/205
4,899,265	2/1990	Maglica .....	362/203
4,942,505	7/1990	Maglica .....	362/203
4,951,183	8/1990	Wang .....	362/187
4,967,325	10/1990	Shiau .....	362/188
5,003,440	3/1991	Maglica .....	362/158
5,113,326	5/1992	Maglica .....	362/158
5,121,308	06/09/92	Maglica et al.....	362/187
5,126,972	6/1992	Reeves et al.....	362/187
5,138,537	8/1992	Wang .....	362/187
5,158,358	10/1992	Maglica et al.....	362/206
5,207,502	5/1993	Maglica .....	362/158
5,293,307	3/1994	Maglica .....	362/203
5,349,506	9/1994	Maglica .....	362/158

MAILING ADDRESS OF SENDER:

PATENT NO. 6,722,772

Jones Day  
 555 West 5<sup>th</sup> Street, 46<sup>th</sup> Floor  
 Los Angeles, CA 90013-1025  
 (213) 489-3939

No. of additional copies



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*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

DEC 06 2004



## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,722,772 *B2*  
DATED : April 20, 2004  
INVENTOR(S) : Anthony Maglica

Page 6 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

5,593,222	01/14/97	Maglica.....	362/157
5,806,964	9/1998	Maglica .....	326/203
6,170,960	1/2001	Maglica .....	362/205
6,193,389	2/2001	Maglica .....	362/207

--  
In the Reference Cited, Foreign Patent Document, section add:

### Foreign Patent Documents

114,558	1/1942	Australia
138873	4/1948	Australia
2372382	11/1976	France Pub. of Patent Application No. 76 36421 and Translation
411218	6/1934	Great Britain
549104	11/1942	Great Britain
752619	7/1956	Great Britain

MAILING ADDRESS OF SENDER:

PATENT NO. 6,722,772

Jones Day  
555 West 5<sup>th</sup> Street, 46<sup>th</sup> Floor  
Los Angeles, CA 90013-1025  
(213) 489-3939

No. of additional copies



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*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 6,722,772 *B2*

DATED : April 20, 2004

Page 7 of 7

INVENTOR(S) : Anthony Maglica

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

812980	5/1959	Great Britain
292,836	6/1928	Great Britain
2,107,038	4/1983	UK
5-14620	11/1930	Japanese Utility Model Pub. & Partial English Translation
14-19704	12/1939	Japanese Utility Model Pub. & Partial English Translation
WO 93/16323	9/1993	PCT/US93/01035

--

MAILING ADDRESS OF SENDER:

PATENT NO. 6,722,772

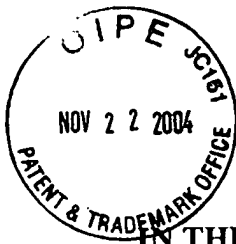
Jones Day  
555 West 5<sup>th</sup> Street, 46<sup>th</sup> Floor  
Los Angeles, CA 90013-1025  
(213) 489-3939

No. of additional copies



This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*



Patent  
Attorney Docket: 265/127

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Inventor: Anthony Maglica

Serial No.: 09/932,443

Filed: August 16, 2001

For: Flashlight And Combination For Use In  
Aligning Flashlight Lamp Bulbs

)  
) **Group Art Unit:** Unknown

)  
) **Examiner:** Unknown

COPY

TRANSMITTAL OF MISSING PARTS

Box Missing Parts  
Commissioner for Patents  
Washington, D.C. 20231

Sir:

I. DOCUMENTS ENCLOSED:

In response to the NOTICE TO FILE MISSING PARTS OF APPLICATION UNDER 37 CFR § 1.53(f), which was mailed by the Patent Office on September 21, 2001, enclosed are:

- ☒ Declaration
- ☒ Power of Attorney: ☒ Separate or ☐ Combined with Declaration
- ☒ Assignment of the invention to Mag Instrument, Inc. (together with PTO Form 1595)
- ☒ A copy of the Notice to File Missing Parts of Application under 37 CFR § 1.53(f)

LA-217901.1

CERTIFICATE OF MAILING  
(37 C.F.R. §1.8a)

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as First Class Mail in an envelope addressed to the Commissioner for Patents, Washington, D.C. 20231.

\_\_\_\_\_  
November 21, 2001  
Date of Deposit

\_\_\_\_\_  
Jay Jupin  
Name of Person Mailing Paper

\_\_\_\_\_  
Signature of Person Mailing Paper

# COPY

Patent  
Attorney Docket: 265/127

## II. REQUEST FOR EXTENSION OF TIME:

The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply.

- ☐ Applicant(s) petitions for an extension of time under 37 CFR § 1.136 [fees: 37 CFR § 1.17(a)(1)-(5)] for the total number of months checked below:

EXTENSION (months)	FEE FOR SMALL ENTITY	FEE FOR OTHER THAN SMALL ENTITY
<input type="checkbox"/> one month	\$55.00	\$110.00
<input type="checkbox"/> two months	\$200.00	\$400.00
<input type="checkbox"/> three months	\$460.00	\$920.00
<input type="checkbox"/> four months	\$720.00	\$1,440.00
<input type="checkbox"/> five months	\$980.00	\$1,960.00

Fee

- ☒ If any extension fee is required, please consider this a petition therefor.

## III. FILING FEES

- ☐ Applicant claims small entity status pursuant to 37 CFR 1.27.

BASIC FILING FEE:							\$740.00
Total Claims	68	-	20	=	48	x \$18.00	\$864.00
Independent Claims	9	-	3	=	6	x \$84.00	\$504.00
Multiple Dependent Claims	\$280	(if applicable)				<input type="checkbox"/>	\$0.00
Surcharge 37 CFR § 1.16(e)	\$130	(if applicable)				<input checked="" type="checkbox"/>	\$130.00
TOTAL OF ABOVE CALCULATIONS							\$2,238.00
Reduction by ½ for Filing by Small Entity. Note 37 CFR §§ 1.9, 1.27, 1.28.							<input type="checkbox"/> \$0.00
Extension of Time (from above)							\$0.00
Assignment -- \$40 (if applicable)							<input checked="" type="checkbox"/> \$40.00
TOTAL FEES SUBMITTED HERewith							\$2,278.00

## IV. METHOD OF PAYMENT OF FEES:

- ☒ A check in the amount of \$2,278.00 is enclosed to cover the above fee(s).
- ☐ Charge Lyon & Lyon's Deposit Account No. **12-2475** in the amount of \_\_\_\_\_.

# COPY

Patent  
Attorney Docket: 265/127



The Commissioner is authorized to charge Lyon & Lyon's Deposit Account No. 12-2475 for any fees required under 37 CFR §§ 1.16, 1.17 and 1.445 that are not covered, in whole or in part, by a check enclosed herewith and to credit any overpayments to said Deposit Account No. 12-2475.

Respectfully submitted,

LYON & LYON LLP

Dated: November 21, 2001

By: 

David A. Randall  
Reg. No. 37,217



22249

PATENT TRADEMARK OFFICE

LYON & LYON LLP  
Suite 4700  
633 W. Fifth Street  
Los Angeles, CA 90071  
(213) 489-1600

**For: Flashlight And Combination For Use In  
Aligning Flashlight Lamp Bulbs**

**Examiner:** Unknown

COPY

## INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with 37 CFR §§ 1.97 and 1.98, the items identified in this Information Disclosure Statement ("IDS") are brought to the attention of the Office. The items are listed on the attached form PTO-1449 and copies are enclosed for the convenience of the Examiner.

The items identified in this IDS may or may not be “material” pursuant to 37 CFR § 1.56. The submission thereof by Applicant is not to be construed as an admission that any such patent, publication or other information referred to therein is material or considered to be material (37 CFR § 1.97(h)), or even qualifies as “prior art” under 35 USC § 102 with respect to this invention unless specifically designated by Applicant as such.

In accordance with 37 CFR 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information, as defined by 37 CFR 1.56, exists.

**INFORMATION DISCLOSURE STATEMENT FILING PROVISION:**

- ☒ This IDS is believed to be timely in that it is being submitted under 37 CFR § 1.97(b), that is (1) within three months of the filing date of the application, which is not a continued prosecution application filed under § 1.53(d); or (2) within three months of entry of the national stage as set forth in 37 CFR § 1.491; or (3) before the mailing of a first Office action on the merits; or (4) before the

mailing of a first Office action after filing a request for continued examination under § 1.114. Thus, no fee is required.

- ☒ However, if the undersigned is in error in this regard, Applicant respectfully requests that the Office consider this IDS as filed under 37 CFR § 1.97(c), if applicable, and charge the fee due under 37 CFR § 1.17(p) to the deposit account referenced below.
- ☐ However, if the undersigned is in error in this regard, Applicant respectfully requests that the Office consider this IDS as filed under 37 CFR § 1.97(c), if applicable, and a statement under 37 CFR § 1.97(e) is included below, thus no fee is required.
- ☐ This IDS is being submitted under 37 CFR § 1.97(c), that is after mailing of a first Office action on the merits, but before a Final Action under 37 CFR § 1.113 or a Notice of Allowance under 37 CFR § 1.311.
- ☐ The fee due under 37 CFR § 1.17(p) is submitted herewith.
- ☐ A statement under 37 CFR § 1.97(e) is included below, thus no fee is required. In the event that this IDS is not received before a Final Action or a Notice of Allowance, then Applicant respectfully requests that the Office consider the filing of these papers to be submitted under 37 CFR § 1.97(d) and charge the fee due under 37 CFR § 1.17(p) to the deposit account below.
- ☐ This IDS is being submitted under 37 CFR § 1.97(d), that is after a Final Action under 37 CFR § 1.113 or a Notice of Allowance under 37 CFR § 1.311, but before payment of the issue fee. A statement under 37 CFR § 1.97(e) is included below. The fee due under 37 CFR § 1.17(p) is submitted herewith.

**STATEMENT UNDER 37 CFR § 1.97(e):**

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- ☐ No item contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this statement after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 CFR § 1.56(c) more than three months prior to the filing of this IDS.

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Respectfully submitted,  
LYON & LYON LLP

Dated: 11/21/01

By:

  
\_\_\_\_\_  
David A. Randall  
Reg. No. 37,217



22249

LYON & LYON LLP  
633 W. Fifth Street,  
Suite 4700  
Los Angeles, CA  
90071



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DKT: 265/127 SN: 09/932,443  
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INFORMATION DISCLOSURE STATEMENTAPPLICANT:  
Maglica, AnthonyFILING DATE:  
August 16, 2001GROUP:  
unknown

(Use several sheets if necessary)

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
	AA	1,584,539	5/1926	Hopkins	362	188	
	AB	1,603,272	10/1926	Eaton			
	AC	1,608,195	11/1926	Barany			
	AD	1,638,716	8/1927	Surles			
	AE	1,644,126	10/1927	Harris			
	AF	1,674,650	11/1926	Leser			
	AG	1,680,169	3/1928	Osean	362	188	
	AH	1,758,835	5/1930	Hime			
	AI	1,851,503	3/1932	Flamm	240		
	AJ	2,016,819	10/1935	Meginniss	362	188	
	AK	2,097,222	10/1937	Tompkins	362	187	
	AL	2,173,650	9/1939	Fullmer	240	10.66	
	AM	2,176,301	10/1939	Haas	123	187	
	AN	2,212,103	8/1940	Rothenberg et al.	240	10.69	
	AO	2,272,907	2/1942	Deibel	240	10.61	
	AP	2,339,356	1/1944	Sachs	362	187	
	AQ	2,490,830	2/1949	Norton	362	184	
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	AS	2,599,295	6/1952	Thomas	362	205	
	AT	2,915,621	12/1959	Garland	362	205	
	AU	2,931,005	3/1960	Saurwein	362	205	
	AV	2,945,944	7/1960	Gillespie	362	188	

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APPLICANT:

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FILING DATE:

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GROUP:

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## U.S. PATENT DOCUMENTS

	AW	3,014,125	12/1961	Draudt	240	10.68	
	AX	3,076,891	2/1963	Moore	362	202	
	AY	3,652,846	3/1972	Starck, II	240	10.63	
	AZ	4,114,187	9/1978	Uke	362	158	
	BA	4,151,583	4/1979	Miller	362	207	
	BB	4,156,271	5/1979	Vercellotti	362	202	
	BC	4,171,534	10/1979	Strowe	362	183	
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	BH	4,329,740	5/1982	Colvin	362	184	
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	BJ	4,398,232	8/1983	Elmore	362	187	
	BK	4,398,238	8/1983	Nelson	362	184	
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	BM	4,472,766	9/1984	Hung	362	205	
	BN	4,495,551	1/1985	Foltz	362	205	
	BO	4,527,223	7/1985	Maglica	362	207	
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Maglica, AnthonyFILING DATE:  
August 16, 2001GROUP:  
unknown

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	BT	4,644,220	2/1987	Carley	313	318	
	BU	4,656,565	4/1987	Maglica	362	187	
	BV	4,658,336	4/1987	Maglica	362	187	
	BW	4,695,551	9/1987	Samhaber et al.	435	292	
	BX	4,725,932	2/1988	Gammache	362	202	
	BY	4,733,337	3/1988	Bieberstein	362	206	
	BZ	4,777,582	10/1985	Sharrah	362	202	
	CA	4,819,141	4/1989	Maglica et al.	362	207	
	CB	4,841,417	6/1989	Maglica et al.	362	206	
	CC	4,843,526	6/1989	Price, III	362	187	
	CD	4,864,474	9/1989	Maglica	362	203	
	CE	4,888,670	12/1989	Sharrah	362	205	
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	CJ	5,003,440	3/1991	Maglica	362	158	
	CK	5,113,326	5/1992	Maglica	362	158	
	CL	5,121,308	06/09/92	Maglica et al	362	187	
	CM	5,126,972	6/1992	Reeves et al.	362	187	
	CN	5,138,537	8/1992	Wang	362	187	
	CO	5,158,358	10/1992	Maglica et al.	362	206	
	CP	5,207,502	5/1993	Maglica	362	158	

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<b>FORM PTO-1449</b>  <b>LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT</b>  (Use several sheets if necessary)	<b>ATTY. DOCKET NO.</b> 265/127	<b>SERIAL NO.</b> 09/932,443
	<b>APPLICANT:</b> Maglica, Anthony	
	<b>FILING DATE:</b> August 16, 2001	<b>GROUP:</b> unknown

U.S. PATENT DOCUMENTS							
	CQ	5,260,858	11/1993	Maglica	362	205	
	CR	5,293,307	3/1994	Maglica	362	203	
	CS	5,349,506	9/1994	Maglica	362	158	
	CT	5,593,222	01/14/97	Maglica	362	157	
	CU	5,806,964	9/1998	Maglica	326	203	
	CV	6,170,960	1/2001	Maglica	362	205	
	CW	6,193,389	2/2001	Maglica	362	207	

FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES	TRANSLATION NO
	CX	114,558	1/1942	Australia				
	CY	138873	4/1948	Australia				
	CZ	2372382	11/1976	France Pub. of Patent Application No. 76 36421 and Translation			X	
	DA	411218	6/1934	Great Britain				
	DB	549104	11/1942	Great Britain				
	DC	752619	7/1956	Great Britain				
	DD	812980	5/1959	Great Britain				
	DE	292,836	6/1928	Great Britain				
	DF	2,107,038	4/1983	UK				
	DG	5-14620	11/1930	Japanese Utility Model Pub. & Partial English Translation			X	
	DH	14-19704	12/1939	Japanese Utility Model Pub. & Partial English Translation			X	
	DI	WO 93/16323	9/1993	PCT/US93/01035				

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Anthony MAGLICA

Serial No.:

09/932,443

For:

FLASHLIGHT AND COMBINATION FOR USE IN  
ALIGNING FLASHLIGHT LAMP BULBS  
August 16, 2001

Filed:

MISSING PARTS

Attorney(s):

David A. Randall

Docket No.:

265/127

Date of Deposit:

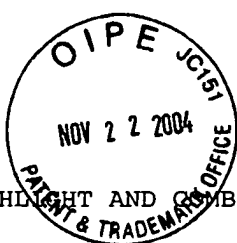
November 21, 2001

Enclosure(s):

Missing Parts Transmittal Letter; Notice to File Missing Parts Assignment with PTO-1595 Recordation; Power of Attorney; Utility Declaration; Information Disclosure Statement with PTO-1449 and copies of cited items; Check No. 15014 for \$2,278.00 and Postcard.

LA-205657.1





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09/932,443

FLASHLIGHT AND COMBINATION FOR USE IN ALIGNING FLASHLIGHT LAMP BULBS

## Transaction History

Date	Contents Description
04-20-2004	Recordation of Patent Grant Mailed
04-01-2004	Issue Notification Mailed
04-20-2004	Patent Issue Date Used in PTA Calculation
03-18-2004	Receipt into Pubs
03-16-2004	Application Is Considered Ready for Issue
09-22-2003	Workflow - Drawings Finished
02-09-2004	Mailroom Date of Issue Fee Payment
02-02-2004	Supplemental Papers - Oath or Declaration
02-06-2004	Miscellaneous Incoming Letter
02-09-2004	Issue Fee Payment Recorded
01-30-2004	Receipt into Pubs
12-22-2003	Workflow - File Sent to Contractor
11-07-2003	Mail Notice of Allowance
11-04-2003	Issue Revision Completed
11-04-2003	Notice of Allowance Data Verification Completed
11-04-2003	Case Docketed to Examiner in GAU
11-03-2003	Notice of Allowability
09-22-2003	New or Additional Drawing Filed
09-22-2003	Information Disclosure Statement (IDS) Filed
10-07-2003	Date Forwarded to Examiner
10-07-2003	Date Forwarded to Examiner
09-22-2003	Request for Continued Examination (RCE)
10-07-2003	Express Abandonment (for Entry of CPA / RCE / Rule129)
09-22-2003	Workflow - Request for RCE - Begin
06-17-2003	Mail Final Rejection (PTOL - 326)
06-16-2003	Final Rejection
04-24-2003	Date Forwarded to Examiner
04-14-2003	Response after Non-Final Action
04-14-2003	Request for Extension of Time - Granted
12-18-2002	Mail Non-Final Rejection
12-13-2002	Non-Final Rejection
09-24-2002	Date Forwarded to Examiner
09-16-2002	Response to Election / Restriction Filed
08-12-2002	Mail Restriction Requirement

08-12-2002	Requirement for Restriction / Election
03-08-2002	Case Docketed to Examiner in GAU
11-29-2001	Information Disclosure Statement (IDS) Filed
12-04-2001	Application Dispatched from OIPE
12-03-2001	Application Is Now Complete
09-21-2001	Notice Mailed--Application Incomplete--Filing Date Assigned
09-20-2001	Correspondence Address Change
08-23-2001	IFW Scan & PACR Auto Security Review
08-16-2001	Initial Exam Team nn

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US006722772B2

(12) **United States Patent**  
**Maglica**

(10) Patent No.: **US 6,722,772 B2**  
(45) Date of Patent: **Apr. 20, 2004**

(54) **FLASHLIGHT AND COMBINATION FOR  
USE IN ALIGNING FLASHLIGHT LAMP  
BULBS**

(75) Inventor: **Anthony Maglica, Anaheim, CA (US)**

(73) Assignee: **Mag Instrument, Inc., Ontario, CA  
(US)**

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/932,443**

(22) Filed: **Aug. 16, 2001**

(65) **Prior Publication Data**

US 2003/0035284 A1 Feb. 20, 2003

(51) Int. Cl.<sup>7</sup> ..... **F21V 17/10**

(52) U.S. Cl. .... **362/197; 362/187; 362/188;  
362/208; 362/296; 313/318.11**

(58) Field of Search ..... **362/157, 187,  
362/188, 197, 202, 203, 205, 206, 208,  
296; 313/318.01-318.11, 315**

(56) **References Cited**

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\* cited by examiner

*Primary Examiner*—Stephen Husar

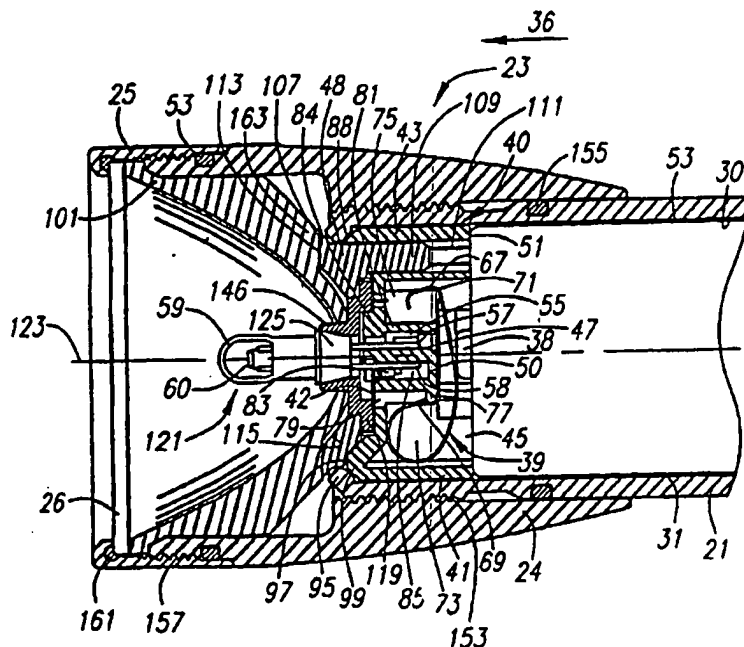
*Assistant Examiner*—Ismael Negron

(74) *Attorney, Agent, or Firm*—Jones Day

(57) **ABSTRACT**

A combination for use in aligning a lamp bulb with the principle axis of a reflector is provided. The combination includes a lamp bulb and a lamp base. The lamp bulb has a pair of electrodes and a filament extending between the electrodes. The lamp base is adapted to receive the electrodes of the lamp bulb. The lamp bulb is secured to the base so that the electrodes extend through the base, the lamp bulb is disposed adjacent the base, and the filament of the lamp bulb is aligned with a predetermined axis extending through the base. The base is configured to be seated in a bore provided in a base receiver mounted adjacent the reflector so as to align the predetermined axis of the base with the principal axis of the reflector. Flashlights employing the combination are also provided.

**26 Claims, 6 Drawing Sheets**



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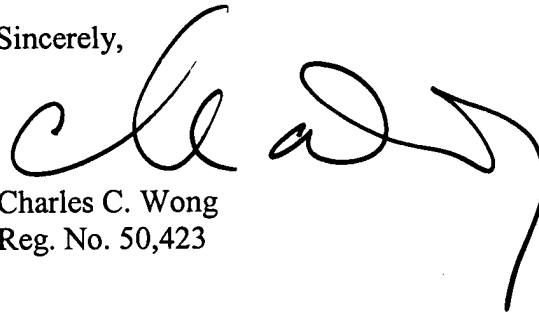
Re: U.S. Patent No. 6,722,772,  
Serial No. 09/432,443  
Inventor: Anthony Maglica  
For: FLASHLIGHT AND COMBINATION FOR USE IN  
ALIGNING FLASHLIGHT LAMP BULBS  
Filed: August 16, 2001

Dear Examiner Negron:

As you requested in our telephone conversation today, I am faxing you a copy of the IDS, Form PTO-1449, the transmittal of missing parts, and the return postcard that were mailed on November 21, 2001 for the above-referenced patent. The references cited in Form PTO-1449 are not printed on the patent. The postcard shows that the USPTO timely received these papers on November 29, 2001.

Thank you for your attention regarding this matter.

Sincerely,



Charles C. Wong  
Reg. No. 50,423

Encl.

LAI-2114188v1

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Respectfully submitted,  
LYON & LYON LLP

Dated: 11/21/01

By:

  
David A. Randall  
Reg. No. 37,217



22249

LYON & LYON LLP  
633 W. Fifth Street,  
Suite 4700  
Los Angeles, CA  
90071

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Inventor: Anthony Maglica

Serial No.: 09/932,443

Filed: August 16, 2001

For: Flashlight And Combination For Use In  
Aligning Flashlight Lamp Bulbs

)  
) Group Art Unit: Unknown

)  
) Examiner: Unknown

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TRANSMITTAL OF MISSING PARTS

Box Missing Parts  
Commissioner for Patents  
Washington, D.C. 20231

Sir:

I. DOCUMENTS ENCLOSED:

In response to the NOTICE TO FILE MISSING PARTS OF APPLICATION UNDER 37 CFR § 1.53(f), which was mailed by the Patent Office on September 21, 2001, enclosed are:

- ☒ Declaration
- ☒ Power of Attorney: ☒ Separate or ☐ Combined with Declaration
- ☒ Assignment of the invention to Mag Instrument, Inc. (together with PTO Form 1595)
- ☒ A copy of the Notice to File Missing Parts of Application under 37 CFR § 1.53(f)

LA-217901.1

CERTIFICATE OF MAILING  
(37 C.F.R. §1.8a)

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as First Class Mail in an envelope addressed to the Commissioner for Patents, Washington, D.C. 20231.

November 21, 2001  
Date of Deposit

Jay Jupin

Name of Person Mailing Paper

Signature of Person Mailing Paper



# COPY

Patent  
Attorney Docket: 265/127

## II. REQUEST FOR EXTENSION OF TIME:

The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply.

- ☐ Applicant(s) petitions for an extension of time under 37 CFR § 1.136 [fees: 37 CFR § 1.17(a)(1)-(5)] for the total number of months checked below:

EXTENSION (months)	FEE FOR SMALL ENTITY	FEE FOR OTHER THAN SMALL ENTITY
<input type="checkbox"/> one month	\$55.00	\$110.00
<input type="checkbox"/> two months	\$200.00	\$400.00
<input type="checkbox"/> three months	\$460.00	\$920.00
<input type="checkbox"/> four months	\$720.00	\$1,440.00
<input type="checkbox"/> five months	\$980.00	\$1,960.00

Fee

- ☒ If any extension fee is required, please consider this a petition therefor.

## III. FILING FEES

- ☐ Applicant claims small entity status pursuant to 37 CFR 1.27.

<b>BASIC FILING FEE:</b>						<b>\$740.00</b>
Total Claims	68	-	20	=	48 x \$18.00	\$864.00
Independent Claims	9	-	3	=	6 x \$84.00	\$504.00
Multiple Dependent Claims	\$280	(if applicable)			<input type="checkbox"/>	\$0.00
Surcharge 37 CFR § 1.16(e)	\$130	(if applicable)			<input checked="" type="checkbox"/>	\$130.00
<b>TOTAL OF ABOVE CALCULATIONS</b>						<b>\$2,238.00</b>
Reduction by ½ for Filing by Small Entity. Note 37 CFR §§ 1.9, 1.27, 1.28.						\$0.00
Extension of Time (from above)						\$0.00
Assignment -- \$40 (if applicable)						\$40.00
<b>TOTAL FEES SUBMITTED HEREWITH</b>						<b>\$2,278.00</b>

## IV. METHOD OF PAYMENT OF FEES:

- ☒ A check in the amount of \$2,278.00 is enclosed to cover the above fee(s).
- ☐ Charge Lyon & Lyon's Deposit Account No. **12-2475** in the amount of \_\_\_\_\_.

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Patent  
Attorney Docket: 265/127

- ☒ The Commissioner is authorized to charge Lyon & Lyon's Deposit Account No. 12-2475 for any fees required under 37 CFR §§ 1.16, 1.17 and 1.445 that are not covered, in whole or in part, by a check enclosed herewith and to credit any overpayments to said Deposit Account No. 12-2475.

Respectfully submitted,

LYON & LYON LLP

Dated: November 21, 2001

By: 

David A. Randall  
Reg. No. 37,217



22249

PATENT TRADEMARK OFFICE

LYON & LYON LLP  
Suite 4700  
633 W. Fifth Street  
Los Angeles, CA 90071  
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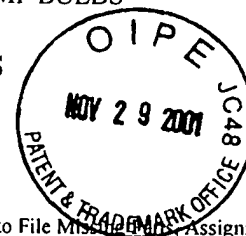
Please acknowledge receipt of the following by affixing hereon the Patent and Trademark Office date stamp and returning this card to our office.

Applicant: Anthony MAGLICA  
 Serial No.: 09/932,443  
 For: FLASHLIGHT AND COMBINATION FOR USE IN  
 ALIGNING FLASHLIGHT LAMP BULBS  
 Filed: August 16, 2001

**MISSING PARTS**

Attorney(s): David A. Randall  
 Docket No.: 265/127  
 Date of Deposit: November 21, 2001  
 Enclosure(s):

Missing Parts Transmittal Letter; Notice to File Missing Parts; Assignment with PTO-1595 Recordation; Power of Attorney; Utility Declaration; Information Disclosure Statement with PTO-1449 and copies of cited items; Check No. 15014 for \$2,278.00 and Postcard.



LA-205657.1

LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S  
INFORMATION DISCLOSURE STATEMENTAPPLICANT:  
Maglica, AnthonyFILING DATE:  
August 16, 2001GROUP:  
unknown

(Use several sheets if necessary)

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
	AA	1,584,539	5/1926	Hopkins	362	188	
	AB	1,603,272	10/1926	Eaton			
	AC	1,608,195	11/1926	Barany			
	AD	1,638,716	8/1927	Surles			
	AE	1,644,126	10/1927	Harris			
	AF	1,674,650	11/1926	Leser			
	AG	1,680,169	3/1928	Osean	362	188	
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	AU	2,931,005	3/1960	Saurwein	362	205	
	AV	2,945,944	7/1960	Gillespie	362	188	

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DATE CONSIDERED:

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Draw line through citation if not in conformance and not considered. Include a copy of this form with next  
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INFORMATION DISCLOSURE STATEMENTAPPLICANT:  
Maglica, AnthonyFILING DATE:  
August 16, 2001GROUP:  
unknown

(Use several sheets if necessary)

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	AX	3,076,891	2/1963	Moore	362	202	
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	BR	4,577,263	3/1986	Maglica	362	187	
	BS	4,581,686	4/1986	Nelson	362	204	

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LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S  
INFORMATION DISCLOSURE STATEMENTAPPLICANT:  
Maglica, AnthonyFILING DATE:  
August 16, 2001GROUP:  
unknown

(Use several sheets if necessary)

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	BT	4,644,220	2/1987	Carley	313	318	
	BU	4,656,565	4/1987	Maglica	362	187	
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	CO	5,158,358	10/1992	Maglica et al.	362	206	
	CP	5,207,502	5/1993	Maglica	362	158	

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communication to applicant

<b>FORM PTO-1449</b>  <b>LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT</b>  (Use several sheets if necessary)	<b>ATTY. Docket NO.</b> 265/127	<b>SERIAL NO.</b> 09/932,443
	<b>APPLICANT:</b> Maglica, Anthony	
	<b>FILING DATE:</b> August 16, 2001	<b>GROUP:</b> unknown

U.S. PATENT DOCUMENTS							
	CQ	5,260,858	11/1993	Maglica	362	205	
	CR	5,293,307	3/1994	Maglica	362	203	
	CS	5,349,506	9/1994	Maglica	362	158	
	CT	5,593,222	01/14/97	Maglica	362	157	
	CU	5,806,964	9/1998	Maglica	326	203	
	CV	6,170,960	1/2001	Maglica	362	205	
	CW	6,193,389	2/2001	Maglica	362	207	

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO	
	CX	114,558	1/1942	Australia				
	CY	138873	4/1948	Australia				
	CZ	2372382	11/1976	France Pub. of Patent Application No. 76 36421 and Translation			X	
	DA	411218	6/1934	Great Britain				
	DB	549104	11/1942	Great Britain				
	DC	752619	7/1956	Great Britain				
	DD	812980	5/1959	Great Britain				
	DE	292,836	6/1928	Great Britain				
	DF	2,107,038	4/1983	UK				
	DG	5-14620	11/1930	Japanese Utility Model Pub. & Partial English Translation			X	
	DH	14-19704	12/1939	Japanese Utility Model Pub. & Partial English Translation			X	
	DI	WO 93/16323	9/1993	PCT/US93/01035				

<b>EXAMINER:</b>  EXAMINER: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include a copy of this form with next communication to applicant	<b>DATE CONSIDERED:</b>  
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**FOREIGN REFERENCES CITED IN THE NOVEMBER 29, 2001 IDS**





Application Date : 13th Feb., 1941. No. 388/41.

*Applicant (Assignee of Actual Inventor)* .. METAL AND MOULDING MANUFACTURERS  
PTY. LIMITED.  
*Actual Inventor* .. .. . ERNEST MATE, of New South Wales.  
*Application and Provisional Specification* Accepted, 6th March, 1941.  
*Complete Specification after Provisional Specification* Lodged, 8th November, 1941.  
*Complete Specification* .. .. . Accepted, 16th January, 1942.  
*Acceptance Advertised (Sec. 50)* .. 29th January, 1942.

### Class 06.6:

*Drawing attached.*

### COMPLETE SPECIFICATION.

#### "Improvements relating to electric torches."

We, METAL AND MOULDING MANUFACTURERS PTY. LIMITED, carrying on business as Manufacturers, at 8 St. Peters Street, Darlinghurst, near Sydney, in the State of New South Wales, Commonwealth of Australia, hereby declare this invention and the manner in which it is to be performed, to be fully described and ascertained in and by the following statement:—

10 This invention relates to electric torches of the kind capable of operating at fixed and also at changeable focal points.

The torch consists of a hollow body preferably tubular to receive one or more dry 15 cells for supplying the electric current to a lamp. The body of the torch is capable of being closed at its lower end by a screwed cap which has a spring of usual construction for pressing the dry cells against one 20 of the lamp contacts and for making a connection from the cells to the casing or body which is of metal.

The upper end of the body has an insulated disc like member secured thereto.

This member is screw threaded or otherwise formed to receive an electric lamp or bulb. Preferably the lamp is screwed into a socket in the said member and the latter has a metallic contact adapted to engage a 5 central contact of the lamp and pass through the insulated material of the disc to the inside of the body where it is engaged by the dry cell terminal previously referred to.

The body also has a spring blade switch 10 member secured at its lower end thereto, the said blade having intermediate its length a push piece. At its upper end the said blade is adapted for engaging one limb of a E shaped contact fitting which latter 15 is secured to the insulated disc and has its other limb disposed in the lamp socket in such manner that it makes electrical connection with the lamp when the latter is placed in position. 20

A second spring blade is also secured to the body and a guiding pin is attached at the upper end of the spring. This resilient pin passes through a hole in the body of

the torch and projects outwardly similarly to the push piece of the spring blade switch member.

There is a head or shoulder formed on the body a short distance from the top thereof upon which a sleeve member is supported.

The sleeve member carries the usual reflector and lens and forms the upper cap of the torch.

The sleeve member is capable of turning and sliding movement upon the top of the torch body and is provided with a focusing guide slot in which the resilient pin is engaged. A second slot termed the switch slot, is also formed in the sleeve and through which the said push piece projects, while at another position on the sleeve a round hole is formed through which the push piece may be alternatively passed.

The invention in one form provides for intermittent flashing at a fixed focus; intermittent flashing at a changeable focus; and continuous illumination with variable focusing.

In a modified form the same functions may be performed except that the means provided for focusing with a continuously closed switch is not provided. The word "continuous" in the above sense does not include a push piece held down by hand.

In order to protect the lamp from shock or damage should the torch be dropped a resilient shock absorber is provided upon the sleeve member and also, if desired upon the body cap.

In order that the invention may be more readily understood reference will now be made to the accompanying drawings wherein:—

Figure 1 is an expanded view of the complete torch showing the upper cap, the body and the lower cap.

Figure 2 is a sectional view of the upper cap showing the reflector, the lens and the rubber shock absorber ring.

Figure 3 is a plan view of the top of the body.

Figure 4 is a part sectional view of the body on the line 4—4 of Figure 3.

Figure 5 is a detail view on the line 5—5 of Figure 3 showing the mounting of the focusing or guiding pin.

Figure 6 is an assembled view of the complete torch showing the focusing pin and the push piece in their normal position.

Figure 7 is a detail view of the upper cap or sleeve member showing the position of the focusing pin and push piece for intermittent lighting and variable focusing.

Figure 8 is a detail view of the upper cap or sleeve member showing the position of the focusing pin and the push piece for focusing with a continuous beam.

The cylindrical metal body 10 which receives the dry cells 11, Figure 4, is closed at its lower end by a screwed cap 12 of usual construction and is also closed at its upper end by a disc 13 of insulating material. This disc 13 receives an electric lamp 34. As illustrated a screw threaded socket 14 is provided for this purpose. The disc 13 has formed therewith a central contact 15 which is adapted to engage the central dry cell terminal 16 and provide a centre contact for the lamp 34 when screwed into the threaded socket 14. With this screw socket type of lamp the thread portion thereof forms one terminal; and to connect with this screwed portion a second lamp terminal is provided in the form of a U-shaped fitting 17 which is secured to the disc 13 by a rivet 35. One limb 36 of the U-shaped fitting 17 engages the lamp 34 while the other limb 38 is adapted to be engaged by a spring blade switch member 18 which is secured at one end to the body 10 by rivets 19, this said end of the spring member 18 being bent to form a resilient spacer 20 for the dry cell 11, see Figure 4.

The switch member 18 has a push piece 21 and when pressed inwards engages the limb 36 of fitting 17. The return circuit for the lamp is from the casing 10 through the usual spring 37 in cap 12 to the base of the lower dry cell 11 in well known manner.

A second spring blade 22 is secured to the body 10, see Figures 1 and 5, and carries the focusing and guiding pin 23. Both the pin 23 and the push piece 21 pass through holes or slots in the body 10 to be explained later.

The pin 23 is normally disposed in the transverse portion 24 of a guiding or focusing slot formed in a sleeve member 25, see Figures 1, 2 and 6 and the push piece 21 is normally disposed in a hole 26 also formed in the said sleeve member 25.

The sleeve member 25 which is capable of turning and sliding movement upon the body 10 and which normally rests upon a

head 27 carries a reflector 28, Figure 2, which together with lens 29 is retained in position by an annular shock absorber 30 of resilient material. It will be observed that as illustrated in Figures 1, 6 and 7 the sleeve member 25 has two diagonal focusing slot portions 31 and 32 extending from the transverse guiding or focusing slot portion 24 and that in addition to the hole 26 for the push piece 21 there is a diagonal slot 33 in which the said push piece 21 may move.

When the sleeve member 25 is placed upon the body 10, see Figure 6, the focusing pin 23 is depressed and finally enters the transverse slot 24; while at the same time the push piece 21 is depressed and finally enters hole 26. This position, Figure 6, may be said to be the normal position of the sleeve member 25 with relation to the body 10 of the torch. In this position the push piece 21 may be pressed to close the circuit of the lamp 34 through spring blade 18 and contact limb 36.

If now it is desired to change the focus of the beam projected from the torch while having manual control of the push piece 21 the sleeve member 24 is turned to the right, Figure 1, so as to assume the position Figure 7 and cause the focusing pin 23 to enter the diagonal slot 31 and the push piece 21 to enter the diagonal slot 33. This may easily be effected as the push piece 21 has a spherical head which enables it to be depressed while it passes from hole 26 to diagonal slot 33. In this Figure 7 position, according to the degree of movement of the sleeve 25, focusing may be achieved and at the same time the push piece 21 is free to be depressed at will to close a circuit for producing a beam of light.

If it is desired to use a continuous beam without having to manually press the push piece 21 the sleeve 25 is turned so that the push piece 21 is disposed beneath that portion of the said sleeve 25 between the hole 26 and the diagonal slot 33. In this position of adjustment the beam is not capable of being focused. However, if the sleeve 25 is turned to the left of Figure 1, so as to assume the position, Figure 8, the focusing pin 23 enters the diagonal slot 32 and the push piece 21 passes beneath the sleeve 25 and is kept depressed to close the lamp circuit at contact limb 36. As seen

in Figure 8 the extreme limit of focusing under these conditions has been attained.

It will be appreciated that various modifications may be made in the above construction without departing from the spirit of the invention, as defined by the appended claims.

Having now fully described and ascertained our said invention and the manner in which it is to be performed, we declare that what we claim is:—

1. Improvements in electric torches, comprising a cylindrical body for receiving dry cells, said body having a screwed cup, a disc of insulating material secured to the body for receiving an electric lamp, said disc also having electrical contacts for the lamp, one of said contacts being capable of engagement by a switch blade member depressible by a push piece, a sleeve member capable of turning and sliding upon the body and having a hole to receive the said push piece, said body also having a resilient pin for engaging a guiding slot in the said sleeve member for the purpose of controlling the turning and sliding movement of the sleeve with relation to the body.

2. Improvements in torches as claimed in Claim 1, characterised in that the electrical contacts for the lamp consists of a central contact which engages both the lamp and the dry cell battery and a U-shaped fitting one limb of which engages the lamp while the other limb is capable of being engaged by the switch blade member.

3. Improvements in torches as claimed in Claim 1, characterized in that the said slot in the sleeve has a horizontal portion and one or more diagonal portions in which the said resilient pin may move when the sleeve is turned with respect to the said body.

4. Improvements in torches as claimed in Claim 3, further characterised in that the diagonal portion or portions of the said slot in conjunction with the resilient pin provide for focusing of the beam from the torch.

5. Improvements in torches as claimed in Claims 1 and 3, characterised in that the said push piece is also capable of engaging a diagonal slot in the sleeve member when the resilient guiding pin enters a diagonal portion of the said slot with which it is engaged.

6. Improvements in electric torches as claimed in Claim 1, characterised in that

the sleeve member has a reflector and a lens held in position by an annular shock absorber of resilient material.

7. Improvements in electric torches  
 5 having a body and a movable sleeve member carrying a reflector and a lens characterised in that the body has a resilient guide pin and a contact making push piece, said guide pin functioning to guide the sleeve with  
 10 respect to the body and also serving to focus the beam from the torch, said push piece being capable of manual depression at a fixed focal point, and also of being depressed manually at variable focal points.  
 15 said push piece being further capable of

7

being automatically depressed to give a continuous beam at a fixed focal point or alternatively at variable focal points.

8. An improved electric torch substantially as described and as illustrated in the 5 accompanying drawings.

Dated this 7th day of November, 1911.

METAL AND MOULDING MANUFACTURERS  
 PTY LIMITED,

By its Patent Attorneys,

Edwd. Warren & Sons,

Fellows Institute of Patent Attorneys  
 of Australia.

Witness—J. E. Wells.

8

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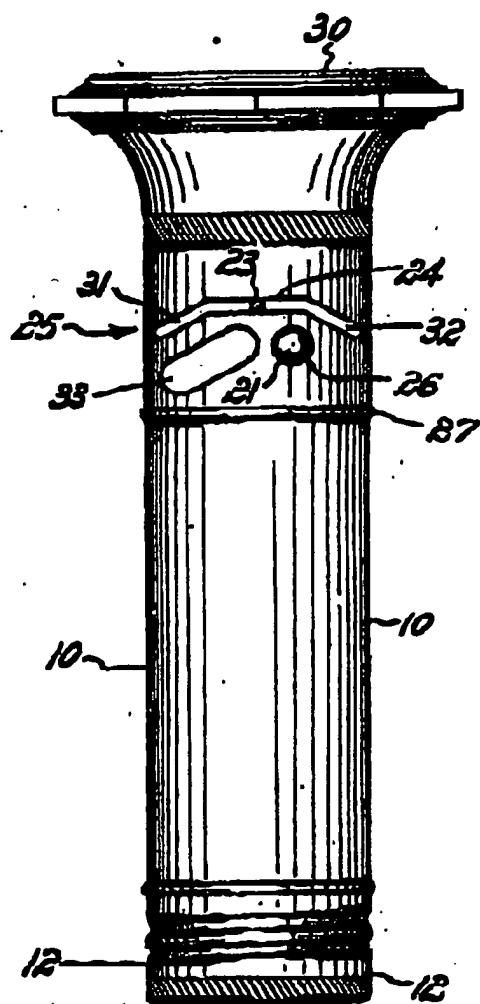


Fig. 6.

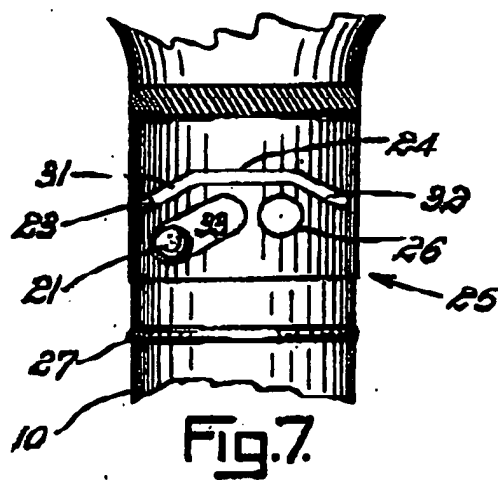


Fig. 7.

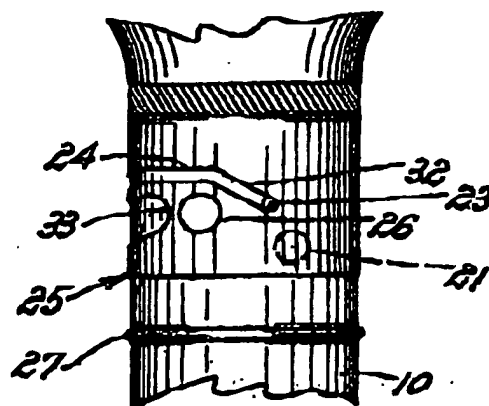
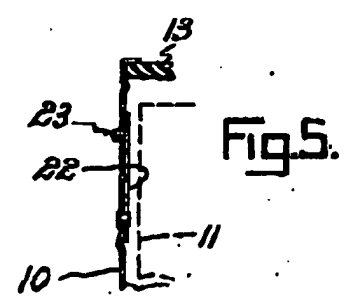
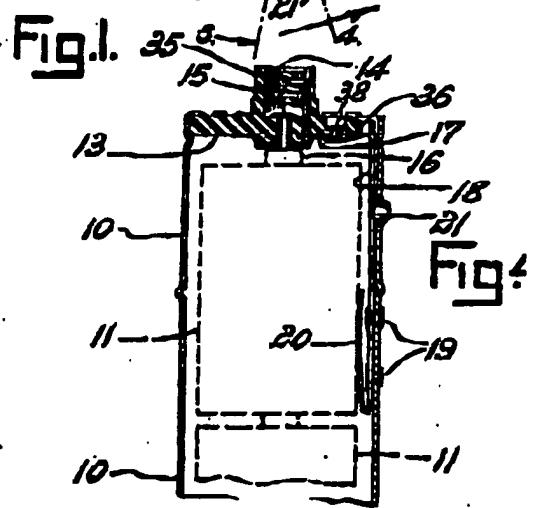
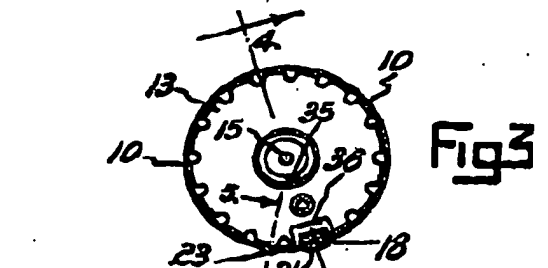
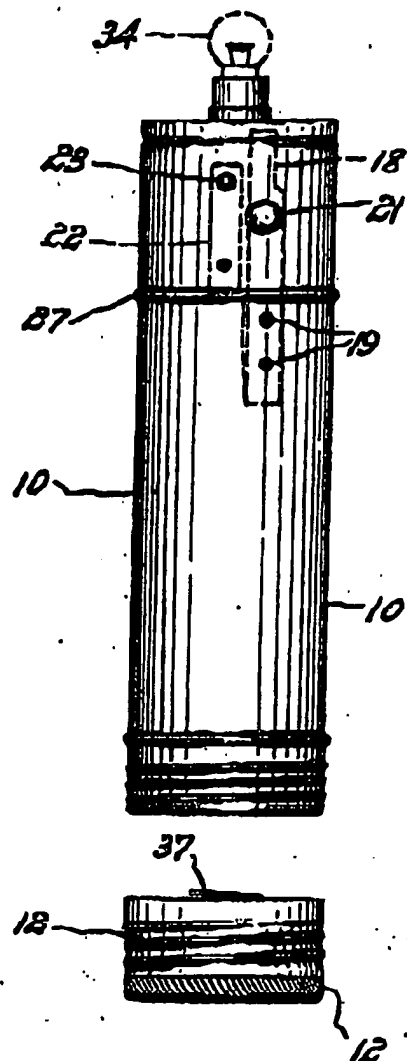
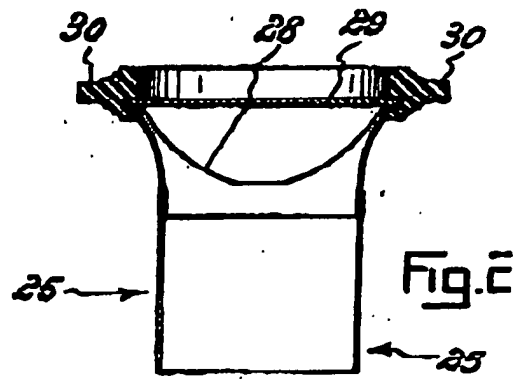
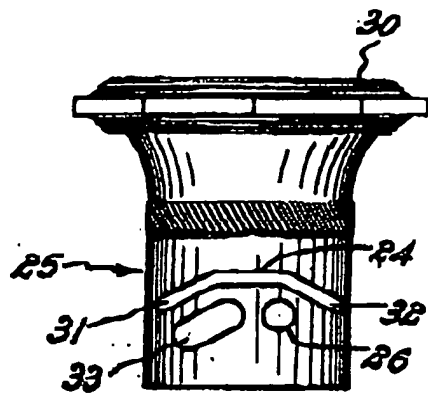


Fig. 8.



# PATENT SPECIFICATION

138,873

Application Date: 29th April, 1947.

11,743/47.

Complete Specification Published . . . . . 29th April, 1948.

Complete Specification Accepted . . . . . 3rd October, 1950.

Class 06.8.

Drawing attached.

## COMPLETE SPECIFICATION.

"Improvements in electric torches."

I, LLOYD GEORGE WHITE, of 10 James Street, West Ryde, in the State of New South Wales, Commonwealth of Australia, Electrical Fitter, hereby declare this invention, and the manner in which it is to be performed, to be fully described and ascertained in and by the following Statement:—

This invention relates to electric torches, particularly those of the self contained type for use in the hand or on vehicles, and for other suitable purposes.

The present invention has been devised to provide means of a simple nature whereby the light beam can be accurately and instantaneously focussed as required by the use of one hand. The case and associated parts are also of inexpensive but efficient form, and wherein the number of such parts is reduced.

A further object is to provide a simple switch which is automatically actuated by the operation of focussing the light beam. Such switch is so constructed as to be free from deterioration due to corrosive action of the batteries.

According to this invention the electric torch consists of two casing sections. One

such section forming a main body section houses the batteries and carries an electric light bulb mounted at one end thereof, while the other sections forms a head section and houses a lens and reflector, and is slidably mounted on the light end of said first section so as to move parallel to the axis of such first section for focussing purposes, such movement being restrained within reasonable limits.

A press button lighting switch is mounted in the side of the main body section to protrude at its operating end, and is adapted for engaging contact with the head section as the latter is slid forward in the focussing operation. A spring loaded pin is arranged at the other side of the main body section opposite the press button switch and takes in a slot in the side of such head section to control the extent of sliding focussing movement. Depression of this pin releases it from the slot and allows the head section to be removed, as for replacement of the light bulb in the end of the main body section.

In order to describe the invention more fully, reference will now be made to the

1

2

—2/11/50.—105.

accompanying drawings, wherein:—

Figure 1 is a sectional elevation of a preferred construction of the electric torch, with the head section retracted, while

Figure 2 is a sectional plan taken through the press button switch and the opposite spring pin, and

Figure 3 is a similar view to Figure 1 with such head section slid forwardly in focussing and effecting automatic switching-on of the torch.

The main body section 4 of cylindrical form and of metal or other suitable material is adapted to receive dry batteries (indicated at 5) therein, and has a removable base cap 6 with contact spring 7A fitted in the interior. At the other end a cross wall 7 of insulating material, preferably plastic, is secured in place, and carries a lamp holder 8 centrally thereof. A light bulb 9 is screwed into the lamp holder 8 more or less as usual.

At one side of the light end of the main body section 4 the switch is arranged, and consists of a spring blade 10 secured at one end by a rivet 11 to the interior of the said body 4, and at its other end is turned out to form a contact 12 which abuts the base of the lamp holder 8 to make the circuit when the press button 13 secured to said blade 10 is pressed in. This press button 13 protrudes normally through an orifice 14 in the body side, and is curved at its top surface.

At the opposite side of the main body section 4 the spring pin 15 is arranged, and is carried on a spring blade 16 secured by a rivet 17 to the interior of the wall of said main body 4. This pin 15 also protrudes through an orifice 18.

The head section 19 is formed at its lower part to neatly slide over the light end of the main body section 4 with the spring pin 15 taking in an elongated slot 20, and so controlling the extent of slidable focussing movement. This elongated slot 20 is formed parallel to the axis of the sections 4 and 19. A hole 21 is provided at the opposite side through which the press button 13 engages with

the head section 19 is in the "off" position.

The head section 19 also has a finger abutment 22 at one side and houses a reflector 23, and there is an end cover panel 24 preferably of transparent plastic.

In use, to focus the torch, the head section 19 is slid forwardly to desired extent, and at the same time passes over the press button 13, depressing same and switching on the light. Retiring of the head section 19 releases the press button 13 and allows it to spring out through the orifice 21 in said head section, thereby breaking the circuit.

Depression of the spring pin 15 in its slot 20 allows the head section 19 to be removed.

HAVING NOW fully described and ascertained my said invention, and the manner in which it is to be performed, I declare that what I claim is:

1. An electric torch consisting of a main body section adapted to receive the battery or batteries therein and having a light bulb at one end; a head section carrying a reflector and a transparent end cover panel or facing, and sleeved over the light bulb end of said main body section so as to be slidable thereon parallel to the axis thereof for focussing purposes; a switch embodied in said main body section and formed for actuating to make the circuit of the torch by slidable focussing movement of said head section on said main body section; and means to control the extent of slidable movement of said head section.

2. An electric torch according to Claim 1, wherein the switch consists of a spring blade secured at one end as by a rivet to the interior of the main body section and having a shaped portion at the other and free end to form a contact to abut the lamp holder or other portion of the torch to make the circuit, said spring blade having a press button affixed thereto to normally protrude through an orifice in the side of said main body portion and taking in a second orifice in the head section when the latter is retracted, the arrangement being



such that slidable focussing movement of said head section effects pressing in of said press button to switch on the torch light.

3. An electric torch according to Claim 1, wherein the means to control the extent of sliding movement of the head section consist of a pin affixed to the free end of a spring blade fixed at one end to the interior of the main body section on the side opposite the switch and protruding the said pin through an orifice in said main body section to take in an elongated hole formed in the said head section parallel with the axis of the said head and main body sections.

5

4. An electric torch according to Claim 2, wherein a finger abutment is provided on the head section adjacent the press button.

5. An electric torch, constructed, combined and operating substantially as herein described and explained, and as illustrated in the accompanying drawings.

DATED this 26th day of FEBRUARY, A.D. 1918.

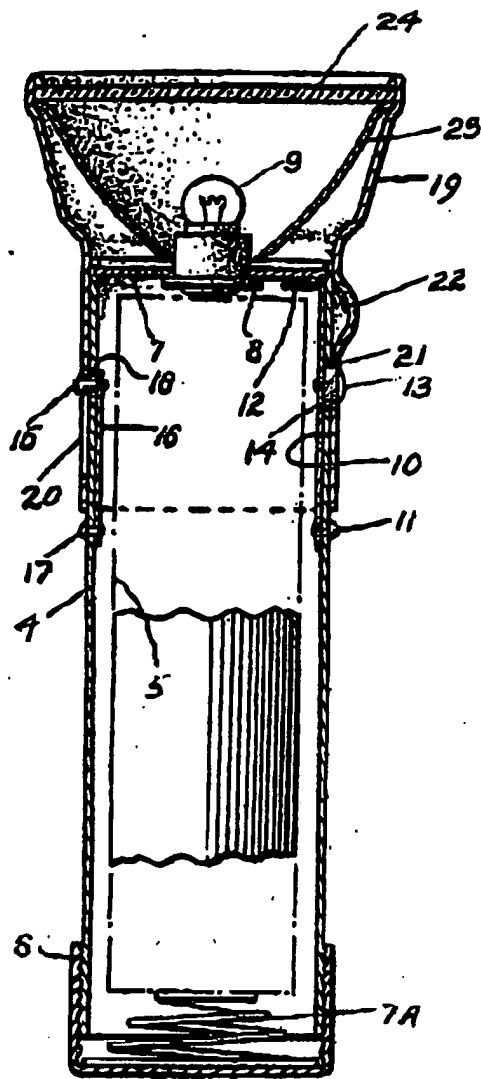
LLOYD GEORGE WHITE,

By His Patent Attorney,

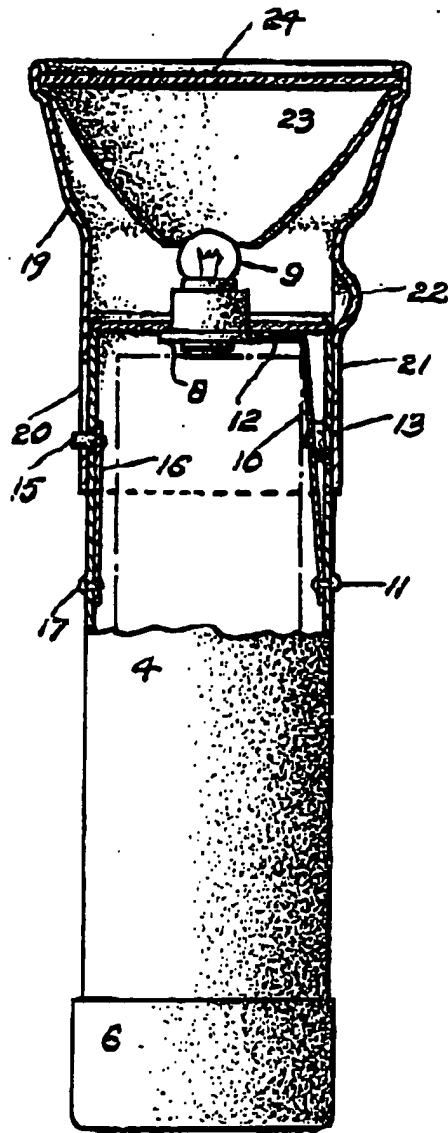
CHAS. BURNES,

Witness: Joy E. Castledine.

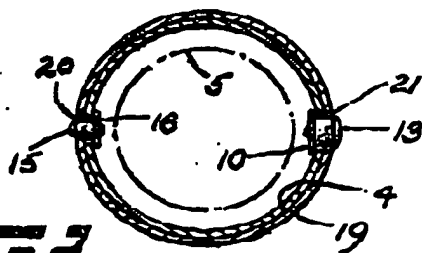
6



**Fig. 1.**



**Fig. 3.**



**Fig. 2.**

A1

DEMANDE  
DE BREVET D'INVENTION

(21)

N° 76 36421

(54) Dispositif de contact, réglage et rupture étanche pour lampe à piles.

(51) Classification internationale (Int. Cl.<sup>2</sup>)... F 21 V 19/02; F 21 L 7/00; F 21 V 23/04.

(22) Date de dépôt ..... 30 novembre 1976, à 16 h.

(33) (32) (31) Priorité revendiquée :

(41) Date de la mise à la disposition du  
public de la demande ..... B.O.P.I. — «Listes» n. 25 du 23-6-1978.

(71) Déposant : ROSENBLATT Paul Charles, B.P. 1109 Papeete Tahiti, Tiarei PK 24800.

(72) Invention de :

(73) Titulaire : *Idem* (71)

(74) Mandataire :

La présente invention a pour titre de produit industriel nouveau un dispositif de contact, de réglage et de rupture d'un faisceau lumineux par déplacement du réflecteur. Un chapeau en plexiglas transparent lorsqu'il est vissé sur son boîtier, provoque le déplacement du réflecteur et du porte ampoule jusqu'au plot annulaire. Le porte ampoule arrivé en butée établit le contact dans une position extrême. En continuant à visser le chapeau, lequel agissant toujours sur le réflecteur on obtient de son déplacement par rapport à l'ampoule le faisceau désiré.

Pour obtenir la rupture du faisceau on dévisse le chapeau jusqu'au moment où le porte ampoule sous l'action de la poussée des piles par le ressort situé au fond du boîtier se dégage du plot annulaire.

Une forme de l'invention est décrite ci-après à titre nullement limitatif en se référant aux dessins annexés.

La figure n° 1 est une vue d'ensemble en position de rupture.

La figure n° 2 représente la position de contact.

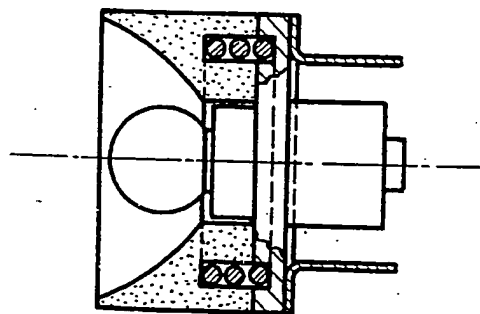
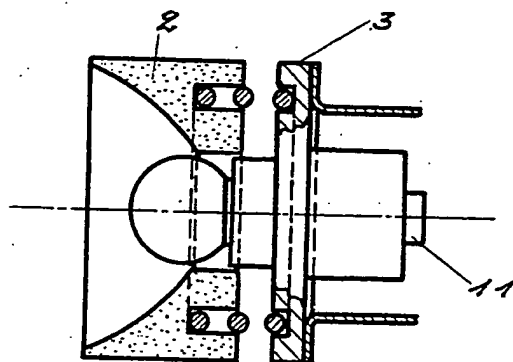
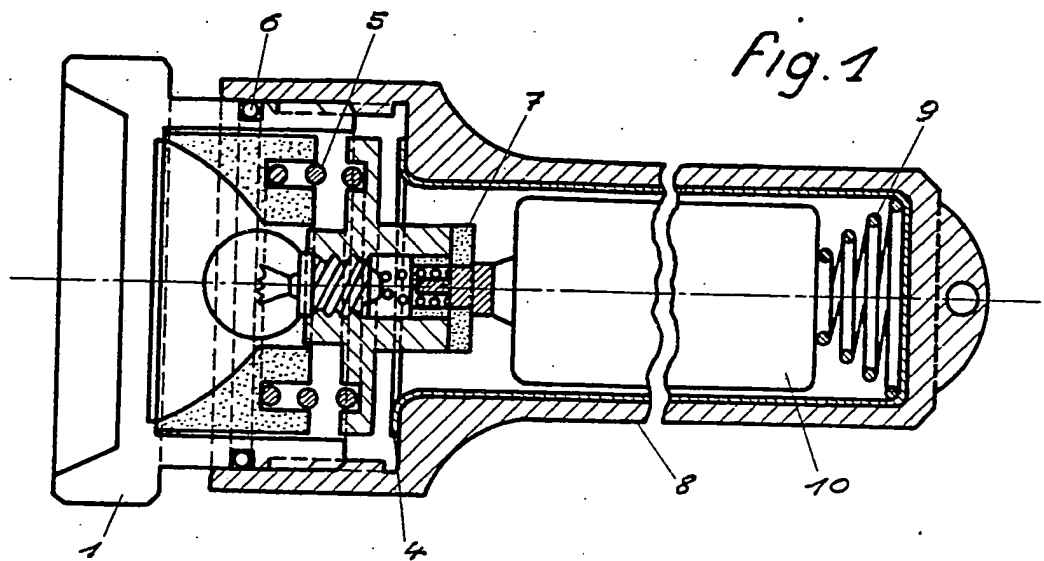
La figure n° 3 représente la position extrême de réglage.

Un chapeau en plexiglas transparent 1 est fixé par vissage sur son boîtier 8 en matière plastique ; l'étanchéité de ce montage est assuré par un joint torrique 6. Le réflecteur en matière plastique ou en aluminium chromé 2 le porte ampoule 3 est en aluminium ou autre alliage léger bon conducteur. Le contact du plot arrière de l'ampoule 11 est isolé du porte ampoule par une pièce isolante 7. Le ressort 5 calibré dans sa course est plus fort que le ressort du fond de boîtier 9. Le contact annulaire 4 fixé dans la tête du boîtier assure la liaison électrique avec le ressort 9.

Il est bien entendu que la présente invention n'est pas limitée au mode de réalisation décrit et représenté qui constitue seulement un exemple auquel de nombreuses modifications peuvent être apportées sans que l'on s'écarte de cette même invention.

## R E V E N D I C A T I O N

Lampe électrique à pile comportant un dispositif unique assurant l'inter-  
ruption du circuit électrique et le réglage du faisceau lumineux, caractérisée  
en ce qu'elle comprend un contact annulaire 4 relié à un ressort 9 placé entre  
le fond du boîtier 8 et les piles 10. Un porte ampoule 3 mobile axialement  
dans le boîtier et bon conducteur de l'électricité, un ressort calibré 5 in-  
terposé entre le porte ampoule et un réflecteur concave 2 mobile axialement  
entouré par un chapeau transparent 1 se vissant sur le boîtier et muni d'un  
joint torrique d'étanchéité. Le vissage du chapeau transparent assurant d'abord  
l'application du porte ampoule 3 sur le contact annulaire 4 puis le réglage  
du faisceau lumineux par déplacement du réflecteur 2 par rapport à l'ampoule.



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April 8, 1986

We certify that the attached  
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lation from the French into  
English to the best of our  
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LANFRANCO CORPORATION

**CERTIFIED TRANSLATION**

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1012 W. 6th St. #602  
Los Angeles, CA 90017

Sig. = [Signature]  
Date = 4/8/86  
Tel. = (213) 481-8068

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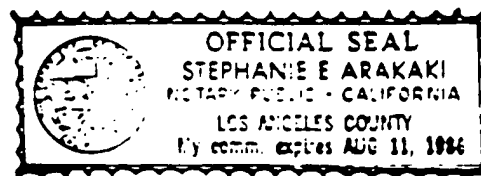
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Pretty, Schroeder, Brueggemann & Clark

County of Los Angeles )  
State of California ) ss.

Subscribed and sworn to before me this 8th day of April, 1986.

[Signature]  
Stephanie E. Arakaki



**55 Languages**

FRENCH REPUBLIC

NATIONAL INSTITUTE  
FOR INDUSTRIAL PROPERTY

Publication No.: 2 372 382  
(To be used only for reproduction orders)

P A T E N T   A P P L I C A T I O N

NO: 76 36421

Water-tight contact, regulating and breaking device for a battery-operated light.

International Classification: F 21 V 19/02 L 7/00; F 21 V 23/04.

Submission Date: November 30, 1976, at 4 PM

Claimed Priority:

Date application was placed  
at the public's disposal

B.O.P.I. - "Lists" No. 25, of 6/23/1976

Applicant: ROSENBLATT, Paul Charles, B.P. 1109 Papeete Tahiti, Tiarel PK 24800.

Invention of:

Holder: Same as Applicant.

Authorized agent:

BE DIFFERENT LANGUAGES  
**LANFRANCO CORP.**  
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The present invention has, by way of new industrial property, a contact, regulating and breaking device by reflector displacement for a light beam. A transparent plexiglass cap, when it is screwed onto its case, causes the reflector and bulb holder displacement to the annular contact. The bulb holder, having stopped, establishes the contact in an extended position. In continuing to screw the cap on, which continues to act against the reflector, the desired beam is obtained from this displacement with respect to the bulb.

In order to break the beam, the cap is unscrewed just until the bulb holder, under the pushing action of the batteries from the spring located at the bottom of the case, disengages from the annular contact.

One form of the invention is described below, in a non-limitative manner, in referring to the attached drawings.

Fig. 1 is an overall view of the breaking point.

Fig. 2 represents the contact position.

Fig. 3 represented the extended regulating position.

A transparent plexiglass cap 1 is held by screwing it onto its case 8, made of plastic or chromed aluminum, the water-tightness of this set up is assured by a "torric joint"\* 6. The reflector, in plastic or chromed aluminum 2, the bulb holder 3 is in aluminum or some other light, good-conducting alloy. The contract of the rear contact of bulb 11 is isolated from the bulb holder by an isolating part 7. The spring 5, calibrated in its direction, is stronger than that at the bottom of case 9. The annular contact 4 held in the top of the case, ensured the electric connection with spring 9.

It is understood that the present invention is not limited to the mode of production described and carried out here, which is only an example to which many changes could be made without deviating from this same invention.

#### CLAIMS

Electric light with batteries containing a unique device ensuring the breakage of the electrical circuit and the regulation of the light beam, characterized in that it is made up of an annular contact 4 joined to a spring 9, placed between the bottom of case 8 and the batteries 10. A bulb holder which is movable axially in the case and highly conductive of electricity, a calibrated spring 5, placed between the bulb holder and the concave reflector 2

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which is movable axially, surrounded by a transparent cap which screws onto the case and which has a water-tight torric joint. The screwing down of the transparent cap thus assures the placement of the bulb holder 3 into contact with the annular contact 4, then the light beam, regulating by displacement of the reflector 2 with respect to the bulb.

\*"Joint torrique" was not found in any of our reference materials.

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REVUE FRANÇAISE

DE LA PROPRIÉTÉ INDUSTRIELLE

PARIS

① N° de publication :  
de l'office ou par la  
Commission de l'innovation

2 572 302

DEMANDE  
DE BREVET D'INVENTION

N° 76 30421

② Description de l'invention, résumée et résumée abrégée pour l'éclaircir.

③ Classification internationale (Inv. O.P.) F 21 V 18'02 F 21 L 7'02 F 21 V 23'04.

④ Date de dépôt ..... 30 novembre 1976, à 16 h.

⑤ Priorité revendiquée :

⑥ Date de la mise à la disposition du public de la demande ..... B.O.P.I. - «Lettres n. 20 du 23-6-1976»

⑦ Déposant : ROSENBLATT Paul Charles, S.P. 1109 Papeterie Tshu, Tshu PK 24500.

⑧ Invention de :

⑨ Titulaire : Idem ⑦

⑩ Mandataire :

8372312

La présente invention a pour titre de produit industriel nouveau un dispositif de contact, de réglage et de rupture d'un faisceau lumineux par déplacement du réflecteur. Un chapeau en plexiglas transparent lorsqu'il est vissé sur son boîtier, provoque le déplacement du réflecteur et de la porte ampoule jusqu'au plot annulaire. Le porte ampoule arrivé en butée établit le contact dans une position extrême. En continuant à visser le chapeau, lequel agissant toujours sur le réflecteur on obtient de son déplacement par rapport à l'ampoule le faisceau désiré.

Pour obtenir la rupture du faisceau on dévisse le chapeau jusqu'au moment où le porte ampoule sous l'action de la poussée des piles par le ressort situé au fond du boîtier se dégage du plot annulaire.

Une forme de l'invention est décrite ci-après à titre nullement limitatif en se référant aux dessins annexés.

La figure n° 1 est une vue d'ensemble en position de rupture.

La figure n° 2 représente la position de contact.

La figure n° 3 représente la position extrême de réglage.

Un chapeau en plexiglas transparent 1 est fixé par vissage sur son boîtier 8 en matière plastique ; l'étanchéité de ce montage est assurée par un joint torique 6. Le réflecteur en matière plastique ou en aluminium chromé 2 la porte ampoule 3 est en aluminium ou autre alliage léger bon conducteur. Le contact du plot arrière de l'ampoule 11 est isolé du porte ampoule par une pièce isolante 7. Le ressort 5 calibré dans sa course est plus fort que le ressort du fond de boîtier 9. Le contact annulaire 4 fixé dans la tête du boîtier assure la liaison électrique avec le ressort 9.

Il est bien entendu que la présente invention n'est pas limitée au mode de réalisation décrit et représenté qui constitue seulement un exemple auquel de nombreuses modifications peuvent être apportées sans que l'on s'écarte de cette même invention.

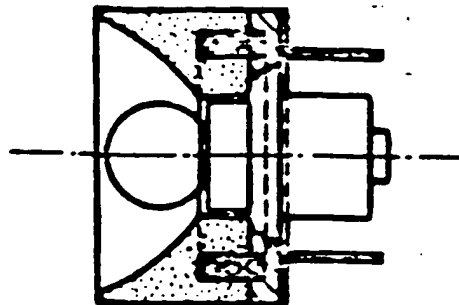
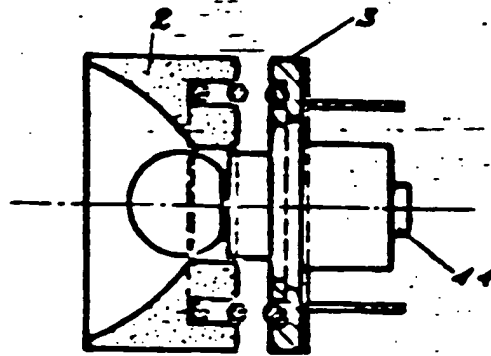
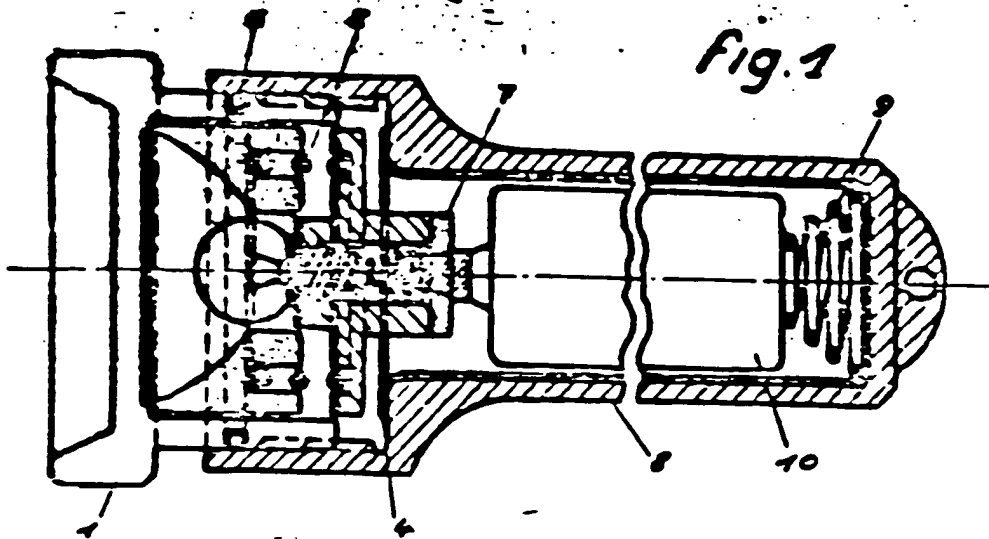
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## REVENDICATION

Lampe Electrique à pile comportant un dispositif unique assurant l'inter-  
 ruption du circuit Electrique et le réglage du faisceau lumineux, caractérisée  
 en ce qu'elle comprend un contact annulaire 4 relié à un re. art 9 placé entre  
 le fond du boîtier 8 et les piles 10. Un porte ampoule 3 mobile axialement  
 dans le boîtier et bon conducteur de l'électricité, un ressort calibré 5 in-  
 terposé entre le porte ampoule et un réflecteur concave 2 mobile axialement  
 entouré par un chapeau transparent 1 se vissant sur le boîtier et muni d'un  
 joint torrique d'étanchéité. Le vissage du chapeau transparent assurant d'abord  
 l'application du porte ampoule 3 sur le contact annulaire 4 puis le réglage  
 du faisceau lumineux par déplacement du réflecteur 2 par rapport à l'ampoule.

Brevet N°

R. ROSENBLATT Pl. Unique  
2372312



[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

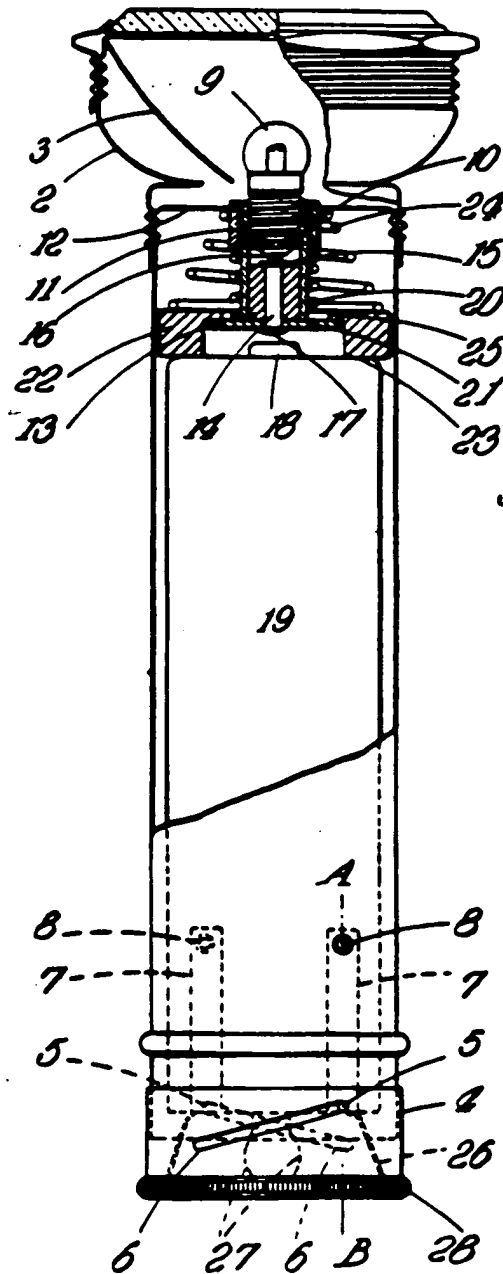


Fig. 3.

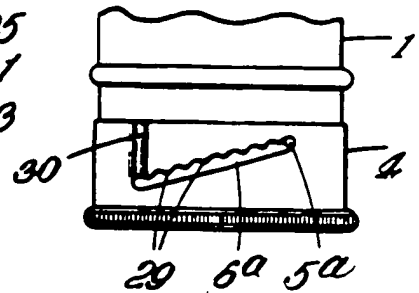
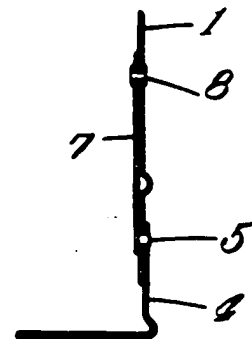


Fig. 2.



# PATENT SPECIFICATION



Application Date: Jan. 26, 1933. No. 2589/33.

Complete Left: Jan. 26, 1934.

Complete Accepted: June 7, 1934.

PROVISIONAL SPECIFICATION.

411,218

EXAMINER'S

COPY

Div. 30

## Improvements in or relating to Electric Torches, Flash Lamps and the like.

We, THE EVER READY COMPANY (GREAT BRITAIN) LIMITED, a British Company, of "Ever-Ready" Works, Hercules Place, Holloway, London, N. 7., Manufacturers, and MAURICE COKER TERRY, Works Manager, of the above address, a subject of the King of Great Britain, do hereby declare the nature of this invention to be as follows:—

- 10 This invention relates to electric torches, flash lamps and the like, and especially to such articles having focusing means, a separate switch being at present employed for completing or breaking the electrical circuit as desired.

According to the invention in an electric torch, flash lamp or the like the completion or breaking of the electrical circuit and the adjustment of the focus are controlled by a single common operating member. The parts are preferably so arranged that initial movement of the operating member causes the electrical circuit to be completed, further movement causing the electric lamp bulb to be moved in relation to the reflector so as to vary the focus.

The operating member is preferably in the form of an end cap closing that end of the battery casing which is remote from the lamp bulb, the cap being movable longitudinally of the casing so as to bring the battery into electrical connection with the lamp bulb, further movement of the end cap in relation to the battery casing causing the lamp bulb to be pushed longitudinally of the casing and through the medium of the battery.

In a preferred embodiment of the invention as applied to an electric torch, the battery casing carries at one end a lens cap and reflector which may be of the usual construction, the opposite end of the battery casing being closed by means of an end cap which can be moved helically of the casing by turning it about the axis of the casing, movement of the end cap in relation to the casing being controlled by means of projections associated with the walls of the casing and which engage inclined slots in the end cap the projections being preferably carried by resilient arms riveted or otherwise secured to the interior

[Price 1/-]

of the casing, the projections passing through holes in the casing and into engagement with the inclined slots. With this arrangement the end cap may be readily removed to obtain access to the battery by depressing the projections by means of the thumb and finger out of engagement with the inclined slots.

The lamp bulb is mounted within a screw-threaded tubular socket disposed axially within the casing at the opposite end and slidable within a surrounding sleeve carried by a disc closing that end of the casing, the tubular socket containing a member of fibre or other insulating material within which is mounted a contact pin, one end of which is engaged by the central electrode of the lamp bulb, the opposite end of the contact pin being adapted to make contact with the positive electrode of the battery when the latter is moved into engagement therewith. The lamp bulb is maintained in its normal position by means of a coiled spring surrounding the tubular socket and disposed between the sleeve in which the socket is slidably mounted and a washer which is preferably constructed from fibre or other insulating material and which is secured beneath the lower edge of the socket by means of the contact pin, the extremity of which is riveted over for this purpose.

The positive electrode of the battery is maintained normally out of engagement with the contact pin by means of a ring or distance piece of insulating material slidably mounted within the battery casing, the ring of insulating material engaging the upper end of the battery and urging the latter towards the opposite end of the battery casing under the action of a coiled spring which may be in the form of a spiral and which is disposed between the upper surface of the insulating ring and the under surface of the disc closing that end of the battery casing. In order to limit movement of the insulating ring towards the end of the casing upon which the end cap is mounted, the insulating ring may be provided with an inwardly projecting lip or flange which engages the adjacent surface of the washer



or fibre disc which is maintained in position by means of the centrally disposed contact pin.

The lower end of the battery may either engage the end cap directly or a separate member may be interposed between the under surface of the battery and the inner surface of the end cap. In the latter case this member may be of substantially cup-shaped form having one or more pressed-out protuberances which are adapted to make contact with the zinc casing or negative electrode of the battery, the cup-shaped member being provided with a pair of resilient arms which are pressed out to constitute a clip for the reception of a spare lamp bulb which is located within the cup-shaped member. The end cap may be provided with a knurled periphery to facilitate its rotation by the operator.

In operation, upon turning the end cap axially of the battery casing in the correct direction, the former will also move longitudinally of the casing due to the interengagement of the projections with the inclined slots, the battery being thereby slid within the casing into a position in which its positive electrode engages the central contact pin, the electrical circuit through the filament of the lamp bulb being thereby completed, further movement of the end cap in the same direction causing the lamp bulb socket to be moved in a direction in which the lamp bulb is moved further away from the reflector so as to adjust the focus to suit particular circumstances. The degree of movement of the end cap in either direction is limited by the length of the inclined slots, the projections coming into engagement with the extremities of the inclined slots at each terminal position, whilst the battery and lamp bulb are automatically returned to their normal positions under the action of the springs when the end cap is turned in the reverse direction, the final turning movement of the end cap causing the positive electrode of the battery to be moved out of engagement with the contact pin so as to break the electrical circuit.

With the object of preventing the possibility of the end cap rotating accidentally in relation to the battery casing, the slots provided in the end cap instead of having substantially straight edges may be of a zig-zag or equivalent construction so that the end cap upon being rotated will be moved longitudinally of the battery casing with a step by step motion. For example, each slot may include a

series of inclined or substantially helically disposed portions connected together by means of intervening portions which are disposed at right angles or substantially at right angles to the longitudinal axis of the battery casing. With this arrangement it is not only necessary to rotate the end cap about the axis of the battery casing, but also to move it longitudinally of the casing against the action of the springs. Alternatively, the walls of the end cap may be pressed out to constitute a series of outwardly extending indentations of part spherical form, the indentations being disposed end to end and preferably connected together, each line of indentations being preferably inclined or substantially helically arranged in relation to the end cap, the casing being provided with spring pressed balls or other members which are adapted to engage the indentations and thereby maintain the end cap frictionally in any desired position. The walls of the end cap adjacent the indentations which are remote from that end of the battery casing containing the electric lamp bulb are preferably formed with a small lid to facilitate the disengagement of the spring pressed portions therefrom and to enable the end cap to be readily removed when desired.

In any of the constructions hereinbefore described, although the slots or other equivalents are preferably disposed in the end cap, they may nevertheless be disposed in the battery casing, the end cap in that case carrying the pins, spring pressed balls or their equivalents with which they are intended to co-operate. As a further alternative, in lieu of the pin-and-slot or equivalent connection between the battery casing and the end cap the co-operating parts may be connected together by means of a screw-threaded engagement.

Although the invention has been described as applied to an electric torch it may nevertheless be equally well applied to flash lamps and battery lamps generally of the focussing kind.

Dated this 26th day of January, 1933.

HASELTINE, LAKE & Co.,  
28, Southampton Buildings, London,  
England, and  
19—25, West 44th Street, New York,  
U.S.A.,  
Agents for the Applicants.

## COMPLETE SPECIFICATION.

## Improvements in or relating to Electric Torches, Flash Lamps and the like.

We, THE EVER READY COMPANY (GREAT BRITAIN) LIMITED, a British Company, of "Ever-Ready" Works, Hercules Place, Holloway, London, N. 7., Manufacturers, and MAURICE COKER TERRY, Works Manager, of the above address, a subject of the King of Great Britain, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to electric torches, flash lamps or the like of the focussing type and especially to electric torches of the kind in which the electric lamp bulb and associated socket can be moved towards or away from the reflector for focussing purposes under the action of the battery which is slidable longitudinally of the battery casing, movement of the battery to force the lamp bulb and its associated socket further away from the reflector being caused by a combined turning and endwise movement of an end cap closing the battery casing at its lower end, the lamp bulb and socket being adapted to return to their normal positions under the action of a coiled spring when the end cap is turned in the opposite direction. In such electric torches it is at present the usual practice to employ a separate switch for completing or breaking the electrical circuit.

The chief object of the invention is to provide an electric torch, flash lamp or the like of a generally improved and simplified construction.

According to the invention in an electric torch, flash lamp or the like of the type set forth completing or breaking of the electrical circuit and focussing is effected by turning the end cap relatively to the battery casing, initial movement of the end cap causing the electrical circuit to be completed, further movement of the end cap causing the electric lamp bulb and its associated socket to be moved further away from the reflector.

It has already been proposed in electric torches, flash lamps or the like other than of the type to which the invention relates to employ a common operating member for completing or breaking the electrical circuit and to vary the focus, completion of the electrical circuit being effected by initial movement of the operating member, further movement causing the reflector

to move relatively to the lamp bulb or the lamp bulb to move relatively to the lens, but in such prior constructions the operating member was not in the form of an end cap closing the battery casing at its lower end.

In order that the invention may be clearly understood and readily carried into effect the same will now be described more fully with reference to the accompanying drawings, which illustrate a preferred embodiment of the invention, wherein:—

Figure 1 represents in elevation, partly in section an electric torch constructed in accordance with the invention.

Figure 2 is a vertical section of a portion of the torch on the line A—B in Figure 1.

Figure 3 represents a fragmentary side elevation of a modified construction of electric torch.

In the construction shown by Figures 1 and 2 of the drawings the battery casing 1 of the electric torch carries at one end a lens cap 2 and reflector 3 which may be of the usual construction, the opposite end of the battery casing 1 being closed by means of an end cap 4 which can be moved helically of the casing by turning it about the axis of the casing, movement of the end cap in relation to the casing being controlled by means of projections 5 associated with the walls of the casing and which engage inclined slots 6 in the end cap, the projections being carried by resilient arms 7 riveted or otherwise secured at 8 to the interior of the casing, the projections passing through holes in the casing, and into engagement with the inclined slots 6. With this arrangement the end cap may be readily removed to obtain access to the battery by depressing the projections by means of the thumb and finger out of engagement with the inclined slots. Alternatively, each slot may terminate at one end in an outwardly pressed trough through which the pins can pass when the end cap is being removed or replaced in position upon the battery casing, in which case the resilient arms may be dispensed with, the pins 5 being riveted or otherwise rigidly mounted upon the battery casing.

The lamp bulb 9 is mounted within a screw-threaded tubular socket 10 disposed axially within the casing at the opposite end and slidable within a surrounding

sleeve 11 carried by a disc 12 closing that end of the casing, the tubular socket containing a member 13 of fibre or other insulating material within which is mounted a contact pin 14, one end 15 of which is engaged by the central electrode 16 of the lamp bulb, the opposite end 17 of the contact pin being adapted to make contact with the positive electrode 18 of the battery 19 when the latter is moved into engagement therewith. The lamp bulb is maintained in its normal position by means of a coiled spring 20 surrounding the tubular socket and disposed between the sleeve in which the socket is slidably mounted and a washer 21 which is preferably constructed from fibre or other insulating material and which is secured beneath the lower edge of the socket by means of the contact pin, the extremity of which is riveted over for this purpose.

The positive electrode of the battery is maintained normally out of engagement with the contact pin by means of a ring or distance piece 22 of insulating material slidably mounted within the battery casing, the ring of insulating material engaging the upper end of the battery at 23 and urging the latter towards the opposite end of the battery casing under the action of a coiled spring 24 which may be in the form of a spiral and which is disposed between the upper surface of the insulating ring and the under surface of the disc closing that end of the battery casing. In order to limit movement of the insulating ring towards the end of the casing upon which the end cap is mounted, the insulating ring may be provided with an inwardly projecting lip or flange 25 which engages the adjacent surface of the washer or fibre disc which is maintained in position by means of the centrally disposed contact pin.

The lower end of the battery may either engage the end cap directly or a separate member 26 may be interposed between the under surface of the battery and the inner surface of the end cap. In the latter case this member may be of substantially cup-shaped form having one or more pressed-out protuberances which are adapted to make contact with the zinc casing or negative electrode of the battery, the cup-shaped member being provided with a pair of resilient arms 27 which are pressed out to constitute a clip for the reception of a spare lamp bulb which is located within the cup-shaped member. The end cap may be provided with a knurled periphery 28 to facilitate its rotation by the operator.

In operation, upon turning the end cap axially of the battery casing in the co-

rect direction, the former will also move longitudinally of the casing due to the interengagement of the projections with the inclined slots, the battery being thereby slid within the casing into a position in which its positive electrode engages the central contact pin, the electrical circuit through the filament of the lamp bulb being thereby completed, further movement of the end cap in the same direction causing the lamp bulb socket to be moved in a direction in which the lamp bulb is moved further away from the reflector so as to adjust the focus to suit particular circumstances. The degree of movement of the end cap in either direction is limited by the length of the inclined slots, the projections coming into engagement with the extremities of the inclined slots at each terminal position, whilst the battery and lamp bulb are automatically returned to their normal positions under the action of the springs when the end cap is turned in the reverse direction, the final turning movement of the end cap causing the positive electrode of the battery to be moved out of engagement with the contact pin so as to break the electrical circuit.

In the modified construction of electric torch shown by Figure 3, the end cap 4 is again provided with two inclined slots, the slots being designated by the reference numeral 6a. In this construction, however, which is intended to obviate any possibility of the end cap turning accidentally relatively to the battery casing, the upper edge of each slot is of sinuous form, each slot being of such a width as to enable the projections or sinuous parts 29 to ride over the pins 5a when the end cap is turned, the interengagement of the sinuous parts with the pins under the action of the spring 24 shown in Figure 1 being such as will prevent over-riding of the parts accidentally. If desired, the resilient arms 7 also may be omitted in this construction, the pins 5a being riveted or otherwise rigidly secured to the battery casing, the entry of the pins into the slots being effected by outwardly pressed tunnels 30 situated at one end of the slots through which the pins can pass when the end cap is being placed in position or removed from the battery casing.

Alternatively, the slots provided in the end cap may be of a zig-zag or equivalent construction so that the end cap upon being rotated will be moved longitudinally of the battery casing with a step-by-step motion. For example, each slot may include a series of inclined or substantially helically disposed portions connected together by means of intervening portions

which are disposed substantially at right angles to the longitudinal axis of the battery casing or alternatively disposed parallel to said longitudinal axis. With the latter arrangement it is not only necessary to rotate the end cap about the axis of the battery casing, but also to move it longitudinally of the casing against the action of the springs. Alternatively, the walls of the end cap may be pressed out to constitute a series of outwardly extending indentations of part spherical form, the indentations being disposed end to end and preferably connected together, each line of indentations being preferably inclined or substantially helically arranged in relation to the end cap, the casing being provided with spring pressed balls or other members which are adapted to engage the indentations and thereby maintain the end cap frictionally in any desired position. The walls of the end cap adjacent the indentations which are remote from that end of the battery casing containing the electric lamp bulb are preferably formed with a small lead to facilitate the disengagement of the spring pressed portions therefrom and to enable the end cap to be readily removed when desired.

Although in the constructions hereinbefore described electrical connection between the battery and filament of the electric lamp bulb is effected by moving the battery into electrical connection therewith, the battery may, if desired, be arranged permanently in electrical connection with the filament, a spring being provided for normally holding the battery out of electrical connection with the end cap, the electrical circuit being completed by moving the end cap relatively to the battery casing so that the end cap or a part associated therewith makes electrical contact with the battery, further movement of the end cap in the same direction causing the lamp bulb and its associated socket to be moved relatively to the reflector.

In any of the constructions hereinbefore described, although the slots or other equivalents are preferably disposed in the end cap, they may nevertheless be disposed in the battery casing, the end cap in that case carrying the pins, spring pressed balls or their equivalents with which they are intended to co-operate. As a further alternative, in lieu of the pin-and-slot or equivalent connection between the battery casing and the end cap the co-operating parts may be connected together by means of a screw-threaded engagement.

Although the invention has been described as applied to an electric torch it may nevertheless be equally well applied

to flash lamps and battery lamps generally of the focussing kind.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An electric torch, flash lamp or the like of the kind set forth, wherein completion or breaking of the electrical circuit and focussing is effected by turning the end cap relatively to the battery casing, initial movement of the end cap causing the electrical circuit to be completed, further movement of the end cap causing the electric lamp bulb and its associated socket to be moved further away from the reflector.

2. An electric torch, flash lamp or the like as in claim 1, wherein initial movement of the end cap in the one direction causes the battery to be moved into electrical connection with the filament of the lamp bulb, further movement of the end cap in the same direction causing the lamp bulb and its associated socket to be moved relatively to the reflector through the medium of the battery, means being provided for returning the battery, lamp bulb and its associated socket to their normal positions upon the end cap being moved in the opposite direction and to its normal position relatively to the battery casing.

3. An electric torch, flash lamp or the like as in claim 2, wherein the lamp bulb and its associated socket are maintained in their normal positions by means of a spring, a further spring being provided for maintaining the battery normally out of electrical connection with the filament of the lamp bulb.

4. An electric torch, flash lamp or the like as in claim 3, wherein the end cap and battery casing are connected together by means of one or more inclined or helically arranged slots formed in the one part co-operating with one or more pins or projections carried by the remaining part.

5. An electric torch, flash lamp or the like as in claim 4, wherein the inclined or helically arranged slots are formed in the end cap.

6. An electric torch, flash lamp or the like as in claim 5, wherein the pins are carried by resilient arms riveted or otherwise secured to the inner surface of the battery casing, said pins projecting through holes in the battery casing and into operative engagement with said slots.

7. An electric torch, flash lamp or the like as in claim 5 wherein the pins are rigidly secured to the battery casing and one end of each slot is connected to the edge of the end cap by means of an out-

wardly pressed tunnel through which the pins can pass into engagement with the inclined slots when removing or replacing the end cap.

8. An electric torch, flash lamp or the like as in claim 7, wherein each slot in the end cap is of sinuous or zig-zag form.
9. An electric torch, flash lamp or the like of the kind set forth substantially as

described with reference to the accompanying drawings. 10

Dated the 26th day of January, 1934.

HASELTINE, LAKE & Co.,  
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England, and  
19-25, West 44th Street, New York.  
U.S.A.,

Agents for the Applicants.

# PATENT SPECIFICATION

Application Date: Aug. 17, 1940. No. 13162/40.

Complete Specification Left: Aug. 18, 1941.

Complete Specification Accepted: Nov. 6, 1942.

548,104



## PROVISIONAL SPECIFICATION Improvements in Electric Torches

I, JOHN SAUNDERS WEBSTER, a British Subject, of 237, Beach Road, Mentone, in the State of Victoria, Commonwealth of Australia, do hereby declare the nature of this invention to be as follows:—

This invention relates to electric torches and refers more particularly to such torches of the type which include a cylindrical body or barrel having at one end a rotatable head piece within which the torch lens and the electric lamp or bulb is located, the opposite end of the barrel being fitted with a detachable tail piece or closure which may be removed to permit of the insertion and withdrawal of the usual dry cell or cells.

Such torches are usually provided with a switch comprising a press button and a sliding catch whereby the press button may be held in its depressed position to keep the torch alight when so desired. Focusing of the light is usually effected by rotary movement of the head piece in opposite directions, the head piece being permanently attached to the barrel and provided with a detachable lens holder or cap which is usually screwed to the front end of the head piece and permits of the insertion and replacement of the lamp bulb.

Torches of the foregoing type as hitherto constructed possess various objections such as the excessive number of parts involving various screwed connections by which the parts, such as the tail piece and the lens holder are attached to the barrel and to the head piece respectively. Furthermore the abovementioned switch in such known constructions is liable to easy derangement so as to render the torch inoperative.

The object of the present invention is to provide improvements in electric torches of the general type referred to whereby a more simple, inexpensive and efficient construction is provided embodying relatively few parts which are not liable to disorder.

One of the principal features of the invention resides in the arrangement whereby the usual switch is dispensed with and the switching operation is effected by rotary movement of the head piece in re-

lation to the torch barrel whilst the focusing operation is effected by longitudinal movement of the head piece in relation to the barrel. This longitudinal movement may be performed in an extremely simple and convenient manner by pressing the head piece forwardly under pressure of the operator's thumb against the action of a spring which automatically returns the head piece to its normal longitudinal position on the barrel when the thumb pressure is released.

Other features of the invention reside in the improved construction and arrangement of the lamp bulb holder, the lens holder or retaining ring, the tail piece, the spare bulb holder therein and other parts, all of which may be detachably connected together in accordance with the invention, without the use of screw threads.

The foregoing and other features of the invention will, however, be better understood from the following description of a suitable practical embodiment of the invention.

The invention includes a cylindrical body or barrel which is open at its lower or rear end and is closed at its upper or front end by means of a bulb holder comprising a metal disc having a central hole from which a tubular socket extends forwardly to receive the lamp bulb in the usual manner. Electrical contact between the bulb stem and the dry cell or cells is effected through said central hole which receives the usual contact nipple on the dry cell adjacent the lamp.

The said disc of the bulb holder may be accommodated between upper and lower discs of non-insulating material such as fibreboard or the like, the three discs being secured within a slightly enlarged or flanged upper end portion of the torch barrel. This flange or enlargement is provided with tongues which are bent over upon the upper insulating disc, the flanged portion of the barrel being also provided with a contact in the form of a lug which is adapted to engage a segmental contact plate within the head piece as hereinafter described.

The bulb holder is also provided with a contact in the form of a tongue which up-

[Price 1/-]

stands from the aforesaid metal disc and is also adapted to engage said segmental contact plate on the head piece to thereby complete the circuit through the lamp when the segmental contact plate is brought into engagement with the two adjacent contacts on the bulb holder and the upper end of the barrel.

The head piece consists of a sleeve of electrically non-conductive material which may be of somewhat tapered or inverted conical form on its exterior. The tubular passage through this sleeve is adapted to rotatably accommodate the front end portion of the torch barrel and the bulb holder thereon so that by relative rotary movement between the barrel and the head piece the aforesaid contacts on the front end of the barrel and the bulb holder are brought into engagement with the segmental contact plate which is secured to the inside of the head piece. These three contact members thus constitute the switch elements of the torch.

Encircling the front end portion of the barrel is a compression spring which is accumulated within the tubular passage through the head piece, between an annular shoulder near the lower or rear end thereof and the aforesaid flange or enlargement on the front end of the barrel. Thus, when the head piece is pressed forwardly in relation to the barrel by pressure of the thumb against the rear portion of the head piece this spring is compressed and when the thumb pressure is released, the head piece is automatically returned by the spring to its normal position thereby effecting the focusing operation in a simple and convenient manner.

A bulbous or other projection may be provided on the exterior of the head piece near its rear end to engage the thumb of the operator during the longitudinal movement of the head piece which effects the focusing operation when the contacts on the front end of the barrel are engaged with the segmental contact plate within the head piece.

The usual reflector is arranged within the head piece behind the lamp bulb and the lens is accommodated in the front portions of the head piece by means of a lens holder or retaining ring. This ring is provided with a pair of oppositely disposed locking lugs which are adapted to engage within substantially T shaped slots or recesses in the upper end of the head piece. The retaining ring is also provided with projecting thumb and finger pieces by which it may be conveniently turned for a slight distance when the locking lugs are engaged within said slots or recesses to thereby attach and detach the retaining ring or lens holder, on the head

piece, when it is desired, for instance, to gain access to the lamp bulb.

The tail piece in accordance with the invention preferably consists of a plug of electrically non-conductive material having an external surface of downwardly converging or inverted conical form above which is a cylindrical portion adapted for detachable engagement with the lower or rear end of the torch barrel. This cylindrical portion of the tail piece is hollow and is provided on its exterior with two oppositely disposed segmental recesses extending longitudinally of the tail piece and communicating with a pair of segmental grooves which are located out of longitudinal alignment with said recesses. The lower or rear end of the torch barrel is provided with corresponding oppositely disposed segmental flanges which are turned inwardly from the barrel and are adapted to be entered through said recesses into the associated segmental grooves by partial rotation of the tail piece in relation to the barrel whereby these two parts are detachably connected together in a simple and effective manner and without the aid of screw threads.

Removably accommodated within the tail piece is a contact member which may also serve as a spare bulb holder. This member may consist of a metal plate or disc having oppositely disposed segmental lugs adapted to engage corresponding segmental recesses inside the tail piece. The disc is provided with a contact in the form of an outstanding tongue which is adapted to engage the inner surface of the torch barrel and thus complete the circuit between the metal barrel and the bottom or rear end of the dry cell through the medium of a compression spring which is secured to the disc. When the tail piece is in place this spring presses forwardly so that the usual contact nipple on the front end of the cell within the head piece is kept in engagement with the lamp bulb.

The said disc of the contact member within the tail piece may also be provided with a spring clip comprising a pair of spring lugs which may be cut or stamped from the disc so as to accommodate the spare lamp bulb behind the disc and within the hollow portion of the tail piece.

In use, the torch is switched on and off by turning the head piece in relation to the barrel in such a manner that the segmental contact plate within the head piece is engaged by the two contacts on the front end of the barrel and the bulb holder disc as aforesaid. The focusing operation may be then readily effected by merely pressing the head piece forwardly against the influence of the compression

spring therein which serves to return the head piece longitudinally of the barrel to its normal position.

The invention provides a simple and inexpensive combination and arrangement of parts which function effectively, are not liable to disorder and may be readily assembled and taken apart. —

It is to be understood that various alter-

ations, modifications and/or additions may be embodied in the foregoing construction without departing from the spirit and scope of the invention.

Dated this 17th day of August, 1940.

HERON ROGERS & CO.,

Agents for Applicant,  
Bridge House, 181, Queen Victoria Street,  
London, E.C.4.

## COMPLETE SPECIFICATION

### Improvements in Electric Torches

I, JOHN SANDERS WHESTER, a British Subject, of 237, Beach Road, Mentone, in the State of Victoria, Commonwealth of Australia, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to electric torches and refers more particularly to such torches of the type which include a cylindrical body or barrel having at one end a rotatable head piece within which the torch lens and the electric lamp or bulb is located, the opposite end of the barrel being fitted with a detachable tail piece or closure which may be removed to permit of the insertion and withdrawal of the usual dry cell or cells.

Such torches are usually provided with a switch comprising a press button and a sliding catch whereby the press button may be held in its depressed position to keep the torch alight when so desired. Focusing of the light is usually effected by rotary movement of the head piece in opposite directions, the head piece being permanently attached to the barrel and provided with a detachable lens holder or cap which is usually screwed to the front end of the head piece and permits of the insertion and replacement of the lamp bulb.

Torches of the foregoing type as hitherto constructed possess various objections such as the excessive number of parts involving various screwed connections by which the parts, such as the tail piece and the lens holder are attached to the barrel and to the head piece respectively. Furthermore the abovementioned switch in such known constructions is liable to easy derangement so as to render the torch inoperative.

The object of the present invention is to provide improvements in electric torches of the general type referred to whereby a more simple, inexpensive and efficient construction is provided embodying re-

latively few parts which are not liable to disorder.

The invention resides in the arrangement whereby the usual switch is dispensed with and the switching operation is effected by rotary movement of the head piece in relation to the torch barrel whilst the focusing operation is effected by longitudinal movement of the head piece in relation to the barrel. This longitudinal movement may be performed in an extremely simple and convenient manner by pressing the head piece forwardly under pressure of the operator's thumb against the action of a spring which automatically returns the head piece to its normal longitudinal position on the barrel when the thumb pressure is released.

The foregoing and other features of the invention will, however, be better understood from the following description of a suitable practical embodiment of the invention.

But in order that this invention may be better understood reference will now be made to the accompanying sheets of drawings which are to be taken as part of this specification and read herewith:—

Figure 1 is a part sectional side elevation of an electric torch in accordance with the invention, parts being broken away for convenience of illustration.

Figure 2 is a cross sectional plan on the line A—A of Figure 1.

Figure 3 is a cross sectional plan on the line B—B of Figure 1.

Figure 4 is a fragmentary section of the upper portion of the torch barrel showing the metal bulb holder for the electric lamp with its contact member and adjacent insulating discs.

Figure 5 is a perspective view showing a modified construction of the bulb holder and its contact member, the latter being shown in full lines and the bulb holder in broken lines.

Figure 6 is a fragmentary side view, partly in section showing on a somewhat enlarged scale the insulating socket which



is secured within the lower end of the torch barrel and is adapted for detachable connection to the hollow tail piece, as seen in Figure 1.

6 Figure 7 is a plan showing a modified construction of the tail piece and a contact plate thereon.

Figure 8 is a part sectional side elevation of the construction seen in Figure 7, the lower portion of the torch barrel being indicated in broken lines.

Figure 9 is a sectional perspective view of the head piece which is adapted to rotate and slide longitudinally upon the upper or front end of the torch barrel as seen in Figure 1, a contact plate within said head piece being also shown.

Figure 10 is a plan of a modified construction of the head piece.

90 Figure 11 is a cross section on the line C-C of Figure 10.

Figure 12 is a fragmentary cross section of the modified head piece seen in Figures 10 and 11, taken in a plane at right angles to that of Figure 11.

25 Figure 13 is a diagram illustrating the electrical circuit of the improved torch.

The invention includes a cylindrical body or barrel 2 which is open at its lower or rear end and is closed at its upper or front end by means of a bulb holder comprising a metal disc 3 having a centrally disposed tubular socket 6 which extends forwardly to receive the lamp bulb 7 in the usual manner. Electrical contact between the bulb stem and the adjacent dry cell or battery is effected in the usual way through the contact nipple 4 on the lamp which engages the adjacent battery contact.

40 The said disc 3 of the bulb holder may be accommodated between upper and lower discs 8, 9, of insulating material such as fibreboard or the like, the three discs being secured within a slightly enlarged or flanged upper end portion 11 of the torch barrel 2 by means of intumed tongues 12 which are cut from the upper end of the barrel 2 and bent over upon the upper insulating disc 8, as seen in Figure 2.

50 The metal disc 3 of the bulb holder is also provided with a contact in the form of a lug 13 which is adapted to engage a segmental contact plate 14 within the head piece as hereinafter described. The contact lug 13 may be formed integral with the bulb holder disc 3 as seen in Figure 4, or, as seen in Figure 5 the contact 13 may be separately formed of spring metal and secured as by soldering to the bulb holder disc 3. The lug 13 projects upwardly or forwardly through an opening 8a in the upper insulating disc 8.

65 The head piece 16 consists of a sleeve of electrically non-conductive material

which may be of somewhat tapered or inverted conical form on its exterior, as shown. The tubular passage through this sleeve is adapted to rotatably accommodate the front end portion of the torch barrel 2 and the bulb holder thereon so that by relative rotary movement between the barrel and the head piece the contact 13 on the bulb holder is brought into engagement with the segmental contact plate 14 76 which is secured to the inside of the head piece. These two contact members thus constitute the switch elements of the torch.

80 The contact plate 14 is accommodated in a corresponding groove or recess 17 in the inner surface of the head piece or sleeve 16 and the side edges of this recess and the plate 14 are preferably of dovetail shape, as shown, to prevent the contact plate falling inwardly when the head piece is being fitted to the barrel 2.

85 Encircling the front end portion of the barrel is a compression spring 18 which is accommodated within the tubular passage through the head piece 16 between an annular shoulder 19 near the lower or rear end thereof and the aforesaid flange or enlargement 11 on the front end of the barrel. Thus, when the head piece is pressed forwardly in relation to the barrel by pressure of the thumb against the rear portion of the head piece this spring is compressed and when the thumb pressure is released, the head piece is automatically returned by the spring to its normal position thereby effecting the focusing operation in a simple and convenient manner.

90 The contact plate 14 is preferably provided at its lower end with a tongue 14a which is turned inwardly and rests upon the shoulder 19 of the head piece, as seen in Figure 9.

95 A bulbous or other projection 21 may be provided on the exterior of the head piece near its rear end to engage the thumb of the operator during the longitudinal movement of the head piece which effects the focusing operation when the contact 13 on the front end of the barrel is engaged with the segmental contact plate 14 within the head piece. The projection 21 may register with an indicator 22 on the barrel 2 when the light is thus switched on.

100 Stops 20 may be formed on the flanged upper end portion 11 of the barrel 2 by turning certain of the tongues thereon outwardly as seen in Figures 1, 2 and 4. These stops may move in a segmental groove or recess 20a seen in Figures 1 and 2 so that by engaging the ends of this groove the stops 20 limit the turning movement of the head piece 16 when the torch is being switched on and off.

Instead of forming the grooves or recesses 17 and 20a in the inner surface of the tubular passage through the head piece, as seen in Figures 1 and 2, vertical ribs 23 and 23a (see Figures 10 to 12) may be formed inside the head piece, the inner surface of which, may be slightly tapered, as seen in Figures 11 and 12. The segmental contact plate 14 may be fitted between the ribs 23 as indicated in broken lines in Figure 10, whilst the stops 20 are accommodated between the two ribs 23a so as to limit the turning movement of the head piece in relation to the barrel when switching the torch on and off as aforesaid.

The usual reflector 24 is arranged within the head piece behind the lamp bulb 7 and the lens 25 is accommodated in the front portion of the head piece by means of a lens holder or retaining ring 26 which is detachably fitted, preferably by means of the screw thread 27, to the front end of the head piece, so as to provide ready access to the lamp bulb and the lens.

The tail piece in accordance with the invention may comprise, as seen in Figures 1, 3 and 6, a hollow plug or cup 29 of electrically non-conductive material, such for instance as "Bakelite" (Registered Trade Mark), having a wall of downwardly converging or inverted conical form. This member may be detachably connected, as by the screw thread 31, to a cylindrical member or socket 32 which is also of electrically non-conductive material and is secured within the lower or rear end of the metal barrel 2. To effect this, the lower extremity of the barrel may be provided with inturned lugs 33 (Figures 1, 3 and 6) which engage beneath segmental projections 34 on the socket 32, between which projections are gaps or spaces 36.

As seen in Figure 1 the tail piece may removably accommodate a contact member 39 which may also serve as a holder for a spare lamp bulb indicated at 38. This contact member may consist of a metal plate or disc provided with a contact in the form of an upstanding tongue 41 which is adapted to engage the inner surface of the torch barrel 2 and thus complete the circuit between the metal barrel and the bottom or rear end of the adjacent dry cell through the medium of a compression spring 42 which is secured to the disc 39. The edge of the latter may rest upon a ledge 43 inside the detachable member 29 of the tail piece and when the latter is in place the spring 42 presses forwardly so that the usual contact nipple on the front end of the cell within the head piece 16 is kept in engagement with the lamp bulb 7.

The said disc of the contact member 39 within the tail piece may also be provided with a spring clip 44 comprising a pair of spring lugs which may be cut or stamped from the disc so as to accommodate the spare lamp bulb 38 as seen in Figure 1.

According to a modified construction as seen in Figures 7 and 8, the hollow tail piece 29 may have secured across its open end, a contact plate 39 comprising a metal disc which is provided with downturned segmental flanges 47. These flanges grip the upper end of the tail piece 29 at intervals in its circumference and in the intervening intervals the tail piece is provided with segmental projections 48, the upper extremities form shoulders 49 which are disposed at a slightly lower level than the bottom edges of the downturned flanges 47. In fitting the tail piece to the barrel 2, according to this modified construction, the inturned lugs 33 on the lower end of the metal barrel are entered through the spaces between the downturned flanges 47 of the contact plate 39 and by slightly turning the barrel in relation to the tail piece, the inturned lugs 33 of the barrel are accommodated firmly between the lower edges of the downturned flanges 47 and the upper edges of the projections 48 on the tail piece which act as stops to limit its inward movement and detachably grip the lugs 33 against the lower edges of the flanges 47.

The metal contact plate or disc 39, as seen in Figures 7 and 8, is also provided with a central opening 51 to receive the compression spring 42 which forces the dry cells or batteries upwardly so as to maintain electrical contact with the lamp bulb 7. The opening 51 is slightly smaller than the spring 42 so as to grip and hold the latter in position.

In use, the torch is switched on and off by turning the head piece 16 in relation to the barrel 2 in such a manner that the segmental contact plate 14 within the head piece is engaged by the contact 13 on the bulb holder disc as aforesaid. The focusing operation may be then readily effected by merely pressing the head piece forwardly against the influence of the compression spring 18 therein which serves to return the head piece longitudinally of the barrel to its normal position.

As will be seen from Figure 13 the electrical circuit indicated by the full line "X" passes from the contact 13, the bulb holder disc 3 and socket 6, through the lamp 7, and the dry cells or batteries, indicated at "X1" to the spring 42 in the tail piece. It then passes through

- the contact member 39 and the metal barrel 2, through the spring 18 in the head piece and the contact plate 14 back to the contact on the bulb holder.
- 5 The invention provides a simple and inexpensive construction which functions effectively, is not liable to disorder and the elements of which may be readily assembled and taken apart.
- 10 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—
- 15 1. An electric focusing torch wherein a head piece is mounted so as to have independent rotary and longitudinal sliding movement relative to the torch barrel said rotary movement opening or closing the
- 20 bulb circuit and said longitudinal movement effecting the focusing.
2. An electric torch according to claim 1, wherein a spring is interposed between said head piece or sleeve and said barrel
- 25 to control said relative longitudinal movement by which the focusing operation is effected.
3. An electric torch according to claim 2, wherein said spring is accommodated
- 30 within said head piece or sleeve between an internal shoulder thereon, and a flange or enlargement on the torch barrel, for the purpose specified.
4. An electric torch according to claim 3, wherein the making and breaking of
- 35 the torch circuit is effected by engagement and disengagement of co-acting contacts carried by said barrel and said head piece or sleeve during relative rotary
- 40 movement thereof.
5. An electric torch according to claims 2, 3 or 4, wherein said contact of the head piece or sleeve consists of a segmental
- 45 contact plate mounted on the inner surface of the head piece which surrounds the upper or front end of the torch barrel and accommodates said spring which is
- 50 compressed to effect focusing by longitudinal movement of the head piece on the barrel whilst said segmental contact plate is engaged by the co-acting contact of the barrel.
6. An electric torch according to claim 5, wherein said segmental contact plate
- 55 is accommodated within a recess on the inner surface of said head piece or sleeve, substantially as described.
7. An electric torch according to claim 6, wherein the side edges of said recess are of dovetailed formation, substantially as
- 60 described.
8. An electric torch according to claim 6, wherein a metal bulb holder for the electric lamp is fitted within the upper or
- 65 front end of the torch barrel and is provided with a contact which is adapted to engage said segmental contact plate within the head piece or sleeve.
9. An electric torch according to claim 8, wherein said contact of the bulb holder consists of a lug which projects sidewardly from a metal plate or disc having a
- 70 screwed central socket to accommodate the lamp bulb, the outer end of said lug being adapted to engage the segmental contact plate in the head piece or sleeve, substantially as described.
10. An electric torch according to claim 9, wherein said metal plate or disc of the bulb holder is accommodated between insulating discs or layers which are secured
- 80 within the upper or front end of the torch barrel.
11. An electric torch according to claim 10, wherein the bulb holder and said insulating discs are secured within the upper or front end of the torch barrel by means of intumed tongues on the latter, substantially as described.
12. An electric torch according to claims 9 and 10, wherein said contact lug of the bulb holder projects through an opening
- 90 in one of said insulating discs or the like, substantially as described.
13. An electric torch according to claims 1 or 2, wherein means are provided to limit the rotary movement of the head piece or sleeve in relation to the torch barrel when switching on and off the light.
14. An electric torch according to claim 13, wherein stops on the upper or front
- 100 end of the torch barrel are accommodated by a recess in the inner surface of the head piece or sleeve, for the purpose specified.
15. An electric torch according to claim 1, wherein a projection is provided on the exterior of the head piece or sleeve, and is adapted to be engaged by the thumb of the operator during the longitudinal
- 110 movement of the head piece to effect the focusing operation.
16. An electric torch according to claim 1, wherein the headpiece is constructed substantially as described and as illustrated in Figures 1, 2 and 9 of the accompanying drawings.
17. An electric torch according to claim 1, in combination with a hollow tail piece of insulating material which is adapted
- 120 for detachable connection to the lower or rear end of the torch barrel, a metal contact plate fitted within or to the upper end of said tail piece and adapted to establish electrical contact with the metal torch barrel and a compression spring fitted to said contact plate, for the purpose specified.
18. An electric torch according to claim 17, wherein said hollow tail piece is
- 130

adapted for detachable connection to a socket of insulating material which is secured within the lower or rear end of the metal torch barrel.

19. An electric torch according to claim 18, wherein said socket is constructed and secured within the lower or rear end of the torch barrel, substantially as described with reference to Figures 1, 5 and 6 of the accompanying drawings.

20. An electric torch according to claim 17, wherein said hollow tail piece and said metal contact plate are constructed and arranged substantially as described with reference to Figures 7 and 8 of the accompanying drawings.

21. An improved electric focusing torch characterized in that the electric circuit through the lamp and the dry cells or batteries within the torch barrel passes through the latter and through a contact plate in a head piece or sleeve which is

rotatably and slidably mounted upon the upper or front end portion of said barrel and is adapted by relative rotary movement of said head piece and barrel to engage and disengage a contact which is electrically connected with the lamp so that the light is switched on and off by such relative rotary movement, and when said contacts are thus engaged focusing may be effected by relative sliding movement of said head piece which carries the torch lens.

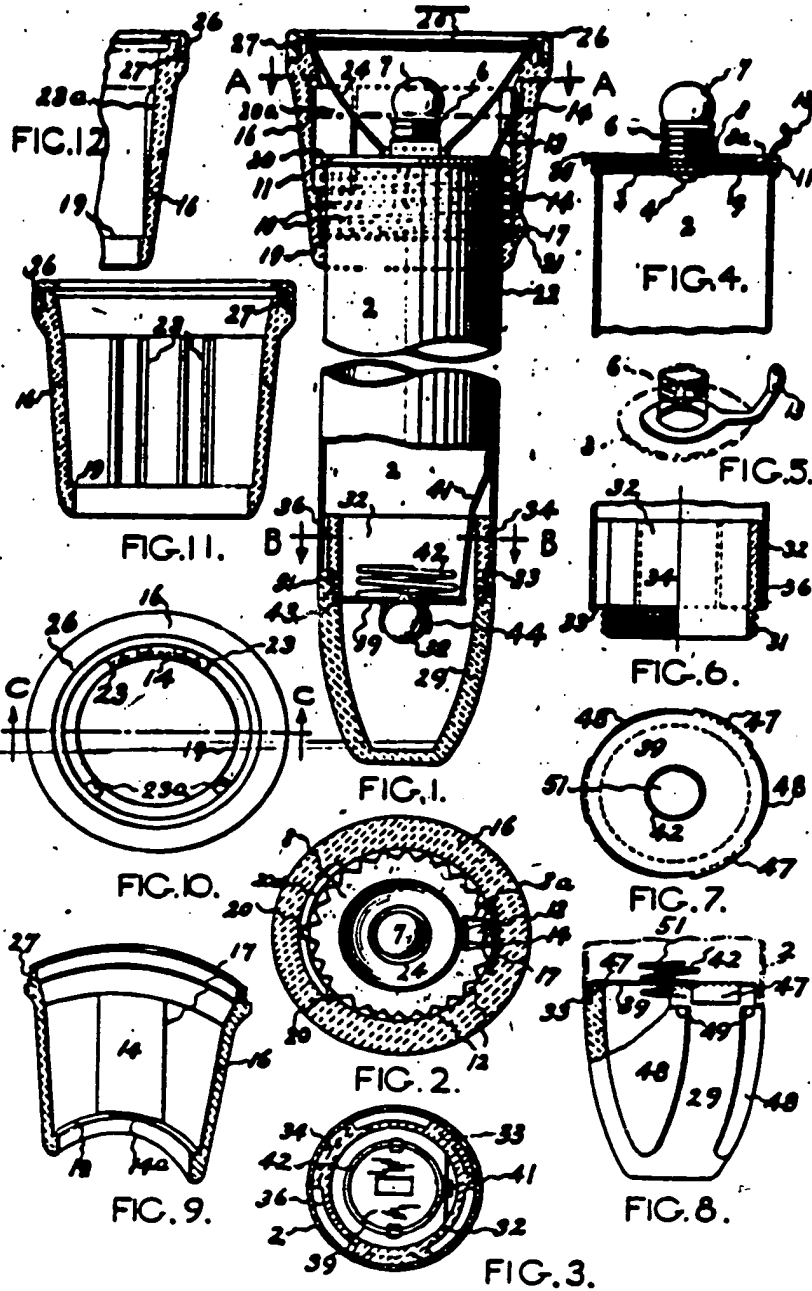
22. An improved electric torch constructed and adapted to operate, substantially as described and as illustrated in the accompanying drawings.

Dated this 18th day of August, 1941.

HEBON ROGERS & CO.,

Agents for Applicant,

Bridge House, 181, Queen Victoria Street,  
London, E.C.4.

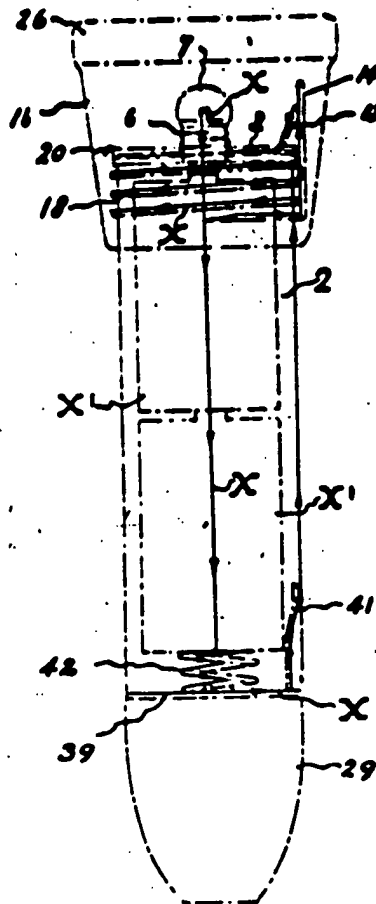


SHEET 1

SHEET 1

2 SHEETS

SHEET 2



Melby & Sons, Photo-Lith

## PATENT SPECIFICATION

752,619



Date of Application and filing Complete

Specification Sept. 2, 1954.

No. 25522154

Application made in France on Sept. 10, 1953.

Complete Specification Published: July 11, 1956.

Index at acceptance:—Class 39(2), E1.

## COMPLETE SPECIFICATION

## "Electric Torch for Divers".

We, LA SPHEROTECNIQUE, a Company organized under the laws of France, of 6 rue Cognac-Jay, Paris, France, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to electric torches for divers of the kind in which a water-tight unit comprising a light bulb with its reflector and lens, is mounted in one open end of a cylindrical housing for containing cell elements, so as to be rotatable in said end for switching on and off the feeding electric circuit of the light bulb. The absolute water-tightness between surfaces relatively movable in rotation and, in the present case, between the surfaces in contact with the movable elements of the device which make it possible to control the cut-off switch for the lamp from the outside, raises a delicate problem, poorly solved heretofore or solved at the cost of complicated devices which are costly and uncertain in operation.

The invention has for its primary object to provide an electric torch of the above kind, but in which the water-tightness is ensured even when diving at great depths where the water pressure reaches 70 pounds per square inch and more, whilst allowing the rotatable unit to be easily rotated by the diver.

To this end, the electric torch according to the invention is characterized in that said unit is provided with an axial trunnion which enters with a clearance the open housing end and which has at least one peripheral groove for locating a circular-section resilient sealing ring, said trunnion being held in the axial direction in the housing by projections which engage the trunnion and are situated on the housing between the last resilient sealing and the

outer edge of the housing open end.

Other advantageous features of the invention will appear from the following description and drawings in which:

Figure 1 is an axial section of a lamp according to the invention.

Figure 2 is a cross-section along the line II-II of Figure 1.

The handle or body of the torch is, in the manner commonly adopted, constituted by a tube 1, of metal or any other suitable material, with a thickness designed for withstanding the immersion pressures, but said tube is blind and closed permanently at one end, for instance by means of a braced or soldered bottom 2 providing absolute water-tightness. The tube contains the usual dry cell battery 3 for this type of lamp, resting on a spring 4 which at the same time ensures electrical contact between the battery and tube when the latter is made of metal, which is the case in the embodiment described. The introduction of the cell elements 3 into the tube is effected through the upper tube end remote from the bottom 2, the upper end being open.

The open tube end is closed, after insertion of the cell elements, by a trunnion 5 which is part of an assembly constituting a lighting projector with its electric lamp or bulb 6 and its associated elements and with a switch controlling the power supply circuit for the lamp. In the embodiment shown, the trunnion 5 constitutes an axial tubular extension of a rigid shell 7, made of any suitable material and sealed against water by a glass pane or lens 8. The fastening for the pane 8 also serves to secure a reflector in position and is provided by a ring 10 which is screwed on a screw thread 11 provided externally around the mouth of shell 7. The fastening is made water-tight by plastic joint rings 12.

Water-tightness between the trunnion 5 and the tube 1 is ensured by at least one

joint ring 13 of the resilient-circular-section type, mounted in a peripheral groove 14 of the trunnion 5 so as to be held permanently thereon. This joint ring 13, offers, in its application to the invention, the twofold advantage of ensuring an absolute watertightness at all possible depths of immersion and of not offering excessive passive resistance to the rotation of the trunnion 5 in the tube 1. This rotation may thus be effected easily by hand by gripping the ring 10 by its periphery, which may be knurled.

It may be noted that the joint ring 13 does not prevent the entrance of water between the trunnion and tube in the narrow annular space located upstream with respect to this joint ring. This offers no drawback since the water cannot flow past the joint ring 13 for entering inside the tube 1 and the hollow trunnion 5 for reaching the elements of the projector.

The lamp or bulb 6 screws, by its base, in a conducting socket 15 mounted in the trunnion 5 so as to be able to slide axially therein, but with no possibility of rotating with respect to this trunnion. To this end, in the example of embodiment contemplated, the socket 15 is provided with radial fingers 16 which engage corresponding longitudinal slots 17 of the trunnion. These fingers 16 pass through bulical slots provided in the side wall of a cylindrical guide 18 loosely fitted in the axial bore of the trunnion 5. A relative angular motion of the trunnion and guide 18 thus causes the axial displacement of the socket 15 and lamp 6.

The guide 18 is provided with means for preventing its relative rotation with respect to the tube 1 and, in the embodiment shown, these means act by friction and consist in a base, resiliently deformable and preferably consisting of a washer 19 of rubber or equivalent material armoured with one or more layers of metal gauze. This washer 19 is secured to the guide 18 by its central portion, between a collar 20 of said guide and a flange 21 of a plug 22 of insulating material forced into the guide 18. This plug 22 carries a terminal 23 arranged axially and consisting, for example, of a tubular body in which a small plunger 24 slides, the plunger being urged outwardly by a spring.

When the cell elements 3 have been introduced in the tube 1, the whole of the projector with all the elements just described is mounted by entering the trunnion 5 in the open end of the tube. Said trunnion is then locked in the axial direction but so as to remain free for rotating. To this end there is provided, in the example shown, a resilient locking clip constituted by pins 25 made of steel wire. Each branch of the clip offers a projection or

protruding portion 26, which passes through an underlying aperture 27 in the wall of the tube 1 and enters an annular groove 28 around the trunnion 5. A wrist strap may be attached to these pins, making it possible to hang the torch from one wrist of the diver. The spring 4 ensures the contact with the body of one terminal of the battery, the other terminal of the battery being held in contact with the terminal 23 insulated from the body. By rotating the trunnion 5 in one or the other direction with respect to the guide 18 held fixedly with respect to the tube 1 due to the adherence of the washer 19 with the latter, the lamp is moved farther away from or closer to the plunger 24 for extinguishing or lighting purposes. The resilient mounting of the plunger 24 makes it possible to vary the position of the lamp 6; filament with respect to the focus of the reflector 9, while preserving the contact between the insulated pile of the lamp and the plunger, for varying at will the angle of aperture of the light beam issuing from the torch.

What we claim is:—

1. An electric torch for divers, of the kind in which a water-tight unit, comprising a light bulb with its reflector and lens, is mounted in one open end of a cylindrical housing for containing cell elements, so as to be rotatable in said end for switching on and off the feeding electric circuit of the light bulb, characterized in that said unit is provided with an axial trunnion which enters with a clearance the open housing end and which has at least one peripheral groove for locating a circular-section resilient sealing ring, said trunnion being held in the axial direction in the housing by projections which engage the trunnion and are situated on the housing between the resilient sealing ring and the outer edge of the housing open end.

2. An electric torch for divers, according to Claim 1 characterized in that the housing projections for engaging the trunnion are provided on a resilient clip which encircles the housing and has protruding portions which pass through apertures in the wall of the housing and enter an annular groove around the trunnion.

3. An electric torch for divers, according to Claim 1, characterized in that the trunnion is hollow and contains a guide for an axially movable socket for the light bulb, said guide being provided with a base the side edge of which bears resiliently against the inner surface of the cylindrical housing so that the guide is held against relative rotation with respect to the housing when the projector and associated trunnion are rotated, the relative angular motion of this projector and guide being used for



controlling the switching operation.

4. An electric torch for divers substantially as hereinbefore described and illustrated in the accompanying drawing.

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752,619

COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original as a reduced size.

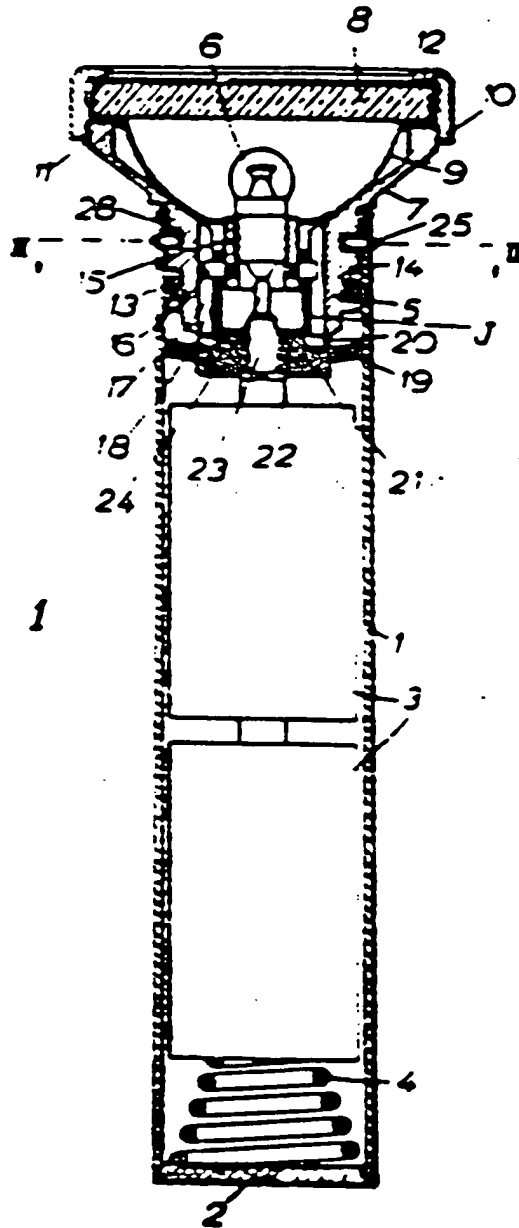


FIG. 1

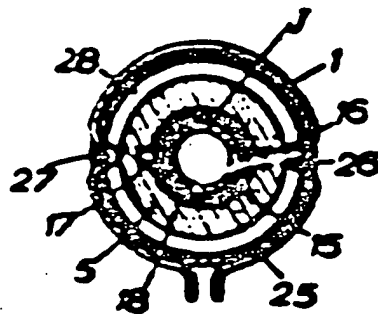


FIG. 2

# PATENT SPECIFICATION

Inventors: VERNON WALTER MEAGER and STUART NETHERWOOD BARKER

812,980



Date of filing Complete Specification (under Section 3 (3) of the Patents Act, 1949): May 1, 1957.

Application Date: May 2, 1956.

No. 13528/56.

Application Date: Dec. 5, 1956.

No. 37161/56.

(Patent of Addition to No. 742,804 dated Feb. 19, 1954).

Complete Specification Published: May 6, 1959.

Index at acceptance:—Class 39(2), E1.

International Classification:—F21b.

## COMPLETE SPECIFICATION

### Improvements in and relating to Electric Battery Lamps

We, B. M. LAMPS LIMITED, of 7, Brunswick Place, Southampton, a British Joint Stock Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to electric battery lamps of the self-contained type.

10 In our prior Specification 742,804, we have described an electric battery lamp, comprising a casing having a closed end and an outwardly flared open end with a flanged rim, the casing being provided at its open end with a rim-fitted metal reflector including a bulb-holder, in which a removable ring or collar made of rubber or like resilient material holds the rims of the casing and reflector towards one another while preventing direct contact between them and permitting their partial relative rotation to effect switching of the lamp circuit.

25 The present invention consists of an improved electric battery lamp in which a bulb-holding reflector, which is partially rotatable in relation to the casing by means of a ring or collar to effect switching of the lamp circuit, as in our aforesaid Specification, is also movable axially or by tilting in relation to the casing in order to provide for intermittent illumination of the lamp, by bringing the rim of the reflector into contact with the open end of the casing. In order to avoid accidental closing of the lamp circuit by axial or tilting movement of the reflector, for example when the lamp is stowed out of use, there may be provided an additional position in the rotary movement of the reflector, at which position it will be locked against axial or tilting movement.

40 The resilient rubber ring or collar holding the reflector and casing together may conveniently be provided with one or two internal annular grooves in which the rims of the reflector and of a front glass or the like are engaged, the ring or collar fitting around the open end of the casing by means of a cylindrical flange formed integral with the ring or collar. With this flange engaging sufficiently tightly to exclude damp, water and dust under normal conditions, the fitting of the ring or collar to the axial movement of the reflector for intermittent illumination of the lamp is liable to set up a slight compression of the air enclosed in the lamp casing, sufficient to lift the flange from engagement, with consequent escape of air; the return of the reflector to normal position will then produce a slight vacuum inside the casing, which may draw in damp air or even suck in water or dust, if subjected to such conditions.

50 The invention therefore also provides for means to prevent such escape of air and consequent partial vacuum, even to the extent of retaining a slight pressure of air inside the lamp casing, so as to eliminate the risk of damp water or dust being introduced into the lamp.

65 The invention is hereinafter described with reference to the accompanying drawings, in which:—

70 Fig. 1 is an elevation, in half section, of an electric battery lamp in the "on" position.

75 Fig. 2 is an enlarged detail showing the parts in the "off" position, after partial relative rotation of the reflector and casing.

80 Fig. 3 is a similar view showing the parts in the "on" position, after axial movement of the reflector in relation to the casing.

85 Fig. 4 is a similar detail view showing the parts in the locked "off" position.

Fig. 5 is an end view of the lamp casing, as seen from the left of Fig. 1, the collar, front glass and reflector being removed.

90 Fig. 6 is a rear view of a carrier ring for three insulating pads, and Fig. 7 shows one of these pads removed.

Fig. 8 is a sectional elevation of the reflector.

Figs. 9 and 10 are sectional elevations of contact members normally attached to the reflector.

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Fig. 11 is an end view of the reflector, as seen from the right of Fig. 8, with these contact members attached.

Fig. 12 is an elevation, in part section, of a safety ring fitted to the lamp.

Referring to Fig. 1, the lamp body, which may consist of an aluminium alloy casting, comprises a cylindrical portion 10 forming a casing for the battery or batteries 11, closed at one end 12 and open at the other end, the latter being flared outwardly as at 13 to provide a cylindrical extension 14 of larger diameter. Within the flaring portion 13 of the body, there are provided three evenly spaced lugs 15, beyond which the extension 14 is bored out to form a shoulder 16. A metal ring 17 of angle-section is fitted tightly into the extension 14 and against the shoulder 16, being secured by any conventional means, the inner flange of this ring is divided, as seen in Fig. 5, by three gaps 18 spaced evenly apart and located between the lugs 15, the back of this flange thus forming three arcuate ledges 19, each of which has a radial wall 20 at one end. Between these ledges and the lugs 15, there are fitted three insulating pads secured in place by adhesive or by pinning, each of these pads comprises an arcuate cheek 21 partly recessed into the face of the ledge and a shorter cheek 22 fitting against the lug 15, the two cheeks being made separate or connected together at one end of the ledge. The cheek 21 extends for about three-quarters of the angular length of the respective ledge 19, and its exposed face is divided by substantially radial humps into two sectors, the remaining portion of the ledge adjacent to the wall 20 being stepped up approximately flush with the end of this cheek.

The pad-carrier ring 17, which is fixed in relation to the lamp body, co-operates with a rotatable reflector or lamp head 23 for switching the lamp on and off by relative rotary movement, the reflector, shown separately in Figs. 8 and 11, comprises a central socket 24 for holding the lamp-bulb 25, which may be of screw type or push-in type, and it is provided with a flanged rim 26, having an inner flat face parallel with the outermost edge of the extension 14 at the open end of the lamp body. The reflector 23, including its socket 24 and its flanged rim 26, may be made in one piece of aluminium alloy, being preferably fitted with a polished metal liner 27, it is covered by a separate front glass 28. The reflector rim 26 and the front glass 28 are engaged in internal annular grooves 29, 30 respectively within a cap or collar 31 made of rubber or like resilient material, which is slidable together with said rim and front glass in relation to the lamp body. The collar is formed with an approximately cylindrical flange 32, which fits around the extension 14, the flange 32 being relatively thin and terminating in a bead 33, the bead is preferably circular in cross-section and slightly smaller

in diameter than the extension 14, upon which it therefore grips tightly to ensure water-tightness of the collar 31, without however preventing relative movement as required for switching the lamp on and off.

The reflector or lamp head 23 is provided with a contact member preferably made in the form of a spider 34 attached to the base 35 of the reflector, as by screws, and having three evenly spaced contact arms 36; these arms project beyond the circumference of the base to positions where they may co-operate with the carrier ring 17 for closing the lamp circuit or with the insulating pads on this ring for interrupting the circuit, the extremities of the arms being preferably bevelled on their edges.

As seen in Fig. 1, the contact arm 36 engages directly with the carrier ring, so as to close the circuit, all three contact arms being similarly engaged with the ring under the axial pressure of the spring 37 maintaining the batteries in engagement with the lamp 25; this pressure will be evenly distributed upon the three arms. Upon rotation of the reflector 23 by means of the rubber collar 31, for interrupting the lamp circuit, the arm 36 is moved from engagement with the ring 17 and brought onto the end of the cheek 21 of the insulating pad, as seen in Fig. 2, all three contact arms being similarly moved onto the insulating pads. In this position, however, the lamp may be brought back into operation, as for temporary or intermittent illumination, by pressing the reflector 23 axially towards the lamp body, thereby bringing the rim 26 of the reflector into contact with the open end of the extension 14 as seen in Fig. 3; it will be sufficient to tilt the reflector, as by pressure at one point of the collar 31, in order to establish the circuit, which will be interrupted as soon as such pressure is removed. By further rotary movement of the collar and reflector 23, each of the contact arms 36 may be brought into the position shown in Fig. 4, where the arm is engaged between the two cheeks 21, 22 of the insulating pad, all three arms 36 being similarly engaged in their insulating pads, in this position, therefore, the lamp is positively locked out of operation, and no axial or tilting pressure will serve to close the circuit, the locked position being therefore advantageous in cases where the lamp has to be stowed with possibility of axial or tilting movement or end pressure.

The base portion 35 of the reflector or lamp body is shown provided with an insulating sheath 38 to obviate risk of accidental closure of the circuit by contact between this base and the interior of the carrier ring 17 which is in conductive connection with the casing or body.

With the reverse direction of rotation, the arms 36 will be brought from the locked position (Fig. 4) between the cheeks of their insulating pads, first into the open-circuit posi-

tion (Fig. 2) where they press against the longer checks 21 of the pads, and secondly by further rotation into the closed-circuit position (Fig. 1) where they press against the carrier ring 17 and thus cause the illumination of the lamp. By still further rotation, the contact arms may be lifted over the walls 20 and brought into alignment with the gaps 18 between the ledges 19 of the carrier ring; in this position they will allow the reflector or lamp head 23 to be withdrawn from the lamp body, together with the rubber cap 31, for example if required to replace the battery or batteries 11 or the lamp bulb 25.

Due to the tight engagement of the collar flange 32 with the exterior of the extension 14, axial movement of the reflector 23 in relation to the lamp body for intermittent illumination may be resisted by slight compression of the enclosed air, but this can be relieved by displacement of air from the interior into the thin flange 32, which expands to form a bulge 39, as indicated, in Fig. 3, without affecting the tightness of the closure effected by the cylindrical head 33, which can roll in place. It will be understood that on the axial return of the reflector to its normal position, the displaced volume of air can leave the bulge 39 in the flange and re-enter the lamp body.

During the fitting of the collar 31 and lamp head 23, the air enclosed in the lamp body will similarly be subject to a slight compression, which can be accommodated by the bulge in the flange until the pressure falls again, when the contact arms 36 are in their normal position; upon removal of the rubber collar, appreciable suction may occur within the lamp body, resulting in a rather sudden release of the collar and the possible jerking of the batteries 11 out of the casing; this may be avoided by the provision of small vent holes as shown at 40, sufficient to reduce the vacuum gradually as the collar is pulled off.

In addition to the contact members 34, 36, the reflector also carries a contact member consisting of a soft metal stud or rivet 41 normally interposed between the centre pole of the lamp bulb 25 and the centre pole of the adjacent battery 11, in order to avoid wear at the lamp contact, due to tilting or rotary movement of the reflector, and possible unscrewing of the lamp bulb, due to the rotary switching movement. This contact member or stud 41 is carried by a plate 42 made of insulating material such as fibre, secured upon the base 35 of the reflector, so that the stud turns in and fro together with the reflector and lamp bulb.

The improved battery lamp is substantially water-proof and also proof against gas, flame and dust, so that it is particularly suitable for use in mines and other places where there is danger of explosion caused by sparks at electrical contacts; in order to prevent un-

authorised removal of the resilient rubber cap 31 and consequent opening up of the lamp under such circumstances, means may be provided for locking the cap in position, while allowing its rotary movement. For example, as shown in Fig. 12, there may be fitted over the head of the lamp a safety ring 43, made in two halves locked together in position by screws 44, of a suitable type which requires a special key or spanner for their release; provision may also be made for a sealing wire to prevent the removal of the safety ring.

The lamp body or casing 10, the inserted carrier ring 17, the reflector or lamp-head 23 and the contact member 34 may be manufactured as mouldings, castings, stampings or spinings of sheet metal; it will be understood that the invention is not limited to the particular embodiment described and illustrated, but may be modified to suit various conditions of use, within the scope of the appended claims.

#### WHAT WE CLAIM IS:—

1. An improved electric battery lamp in which a bulb-holding reflector or lamp head, partially rotatable in relation to the battery casing by means of a cap or collar to effect switching of the lamp circuit, is also movable axially or by tilting in relation to the casing in order to provide for intermittent illumination of the lamp, by bringing the rim of the reflector into contact with the open end of the casing.

2. A battery lamp according to claim 1, in which there is provided an additional position in the rotary movement of the reflector, at which position it will be locked against axial movement.

3. A battery lamp according to claim 1, in which a resilient cap or collar fitted around the open end of the lamp casing, is formed with an integral flange, this flange being expandable to accommodate air displaced from the interior of the lamp casing by the axial movement of the reflector to provide for intermittent illumination.

4. A battery lamp according to claim 3, in which the flange comprises a thin portion of substantially cylindrical shape, normally fitting around the open end of the casing but expandable by bulging outwards to accommodate displaced air, and a terminal head slightly smaller in diameter than the open end of the casing.

5. A battery lamp according to claim 1, in which the battery casing has a flared open end providing a cylindrical extension of larger diameter, into which there is fitted a metal ring having an inner flange divided so as to form three arcuate ledges, insulating pads associated with these ledges being engageable by three contact arms projecting from the rotatable reflector, and these contact arms being adapted to engage with the respective ledges in the closed switching position.

6. A battery lamp according to claims 2

liable to suck in water if the lamp is submerged, or to draw in damp air at other times.

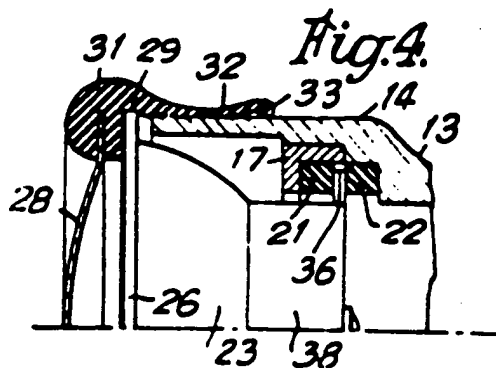
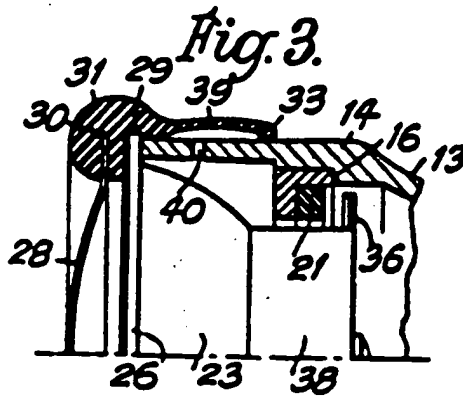
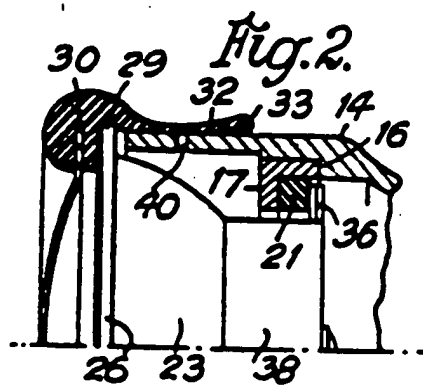
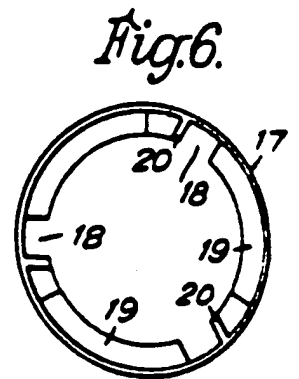
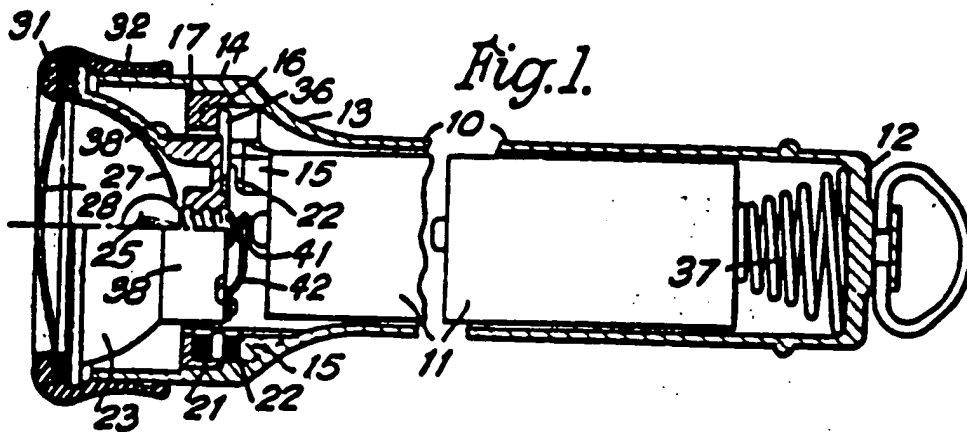
5 The present invention has for its main object to prevent such escape of air and consequent partial vacuum, even to the extent of retaining a slight pressure of air inside the lamp, so as to eliminate the risk of water or damp being introduced into the lamp.

10 According to the invention, the ring or collar is provided not only with its partial extension over the front cover of the lamp, but also with a bead or rim at its opposite end, this bead or rim being preferably circular in cross-section and being smaller in diameter  
15 than the cylindrical extension of the casing so as to grip tightly thereon, and the intermediate portion of the collar is expansible so as to accommodate the volume of air displaced from the interior of the casing by the axial movement of the reflector in relation thereto,  
20 whether in the fitting of the resilient collar or in the intermittent switching on. Thus the air escaping from the interior will force its way

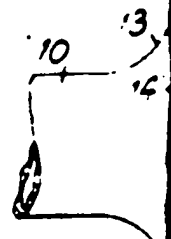
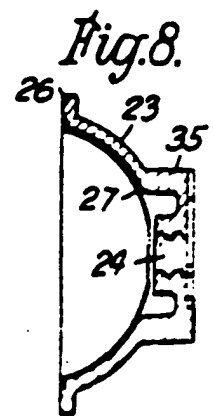
into the space afforded by the intermediate portion of the collar rising from the cylindrical extension as it expands, and on the return movement this air will pass back into the interior of the lamp, there being substantially no change of internal pressure and no subsequent partial vacuum until the resilient collar is drawn off for inspection or replacement of the bulb or battery.

The intermediate portion of the collar may rest normally against the cylindrical extension, its rise from the latter causing the circular-section bead or roll on the extension while still giving a positive seal at this point; under exterior pressure, the intermediate portion will be pressed tightly inwards against the cylindrical extension, thus improving the seal against external pressure, for example when the lamp is submerged.

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*Fig. 3*



able to suck in water if the lamp is submerged, or to draw in damp air at other times.

5 The present invention has for its main object to prevent such escape of air and consequent partial vacuum, even to the extent of retaining a slight pressure of air inside the lamp, so as to eliminate the risk of water or damp being introduced into the lamp.

10 According to the invention, the ring or collar is provided not only with its partial extension over the front cover of the lamp, but also with a bead or rim at its opposite end, this bead or rim being preferably circular in cross-section and being smaller in diameter than the cylindrical extension of the casing so as to grip tightly thereon, and the intermediate portion of the collar is expansible so as to accommodate the volume of air displaced from the interior of the casing by the axial movement of the reflector in relation thereto, whether in the fitting of the resilient collar or in the intermittent switching on. Thus the air escaping from the interior will force its way

into the space afforded by the intermediate portion of the collar rising from the cylindrical extension as it expands, and on the return movement this air will pass back into the interior of the lamp, there being substantially no change of internal pressure and no subsequent partial vacuum until the resilient collar is drawn off for inspection or replacement of the bulb or battery.

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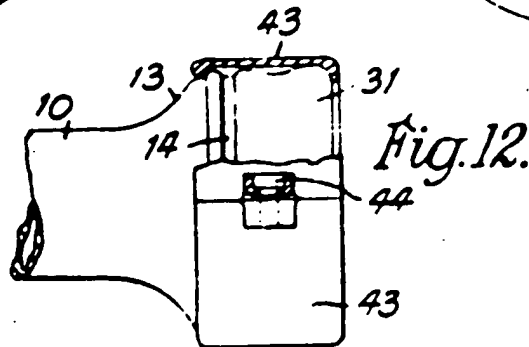
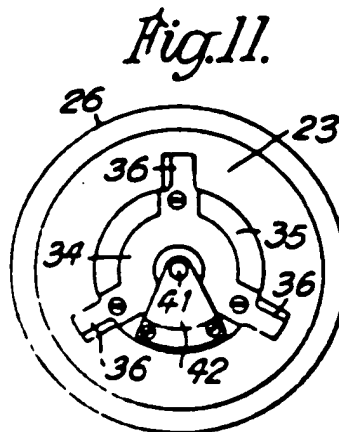
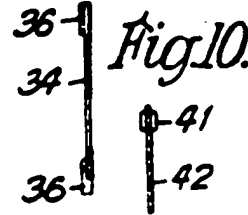
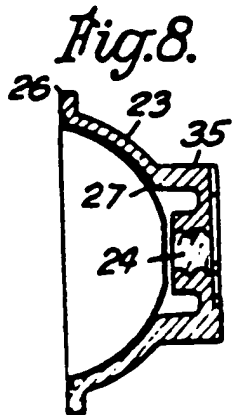
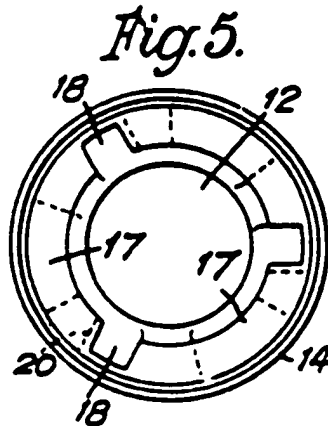
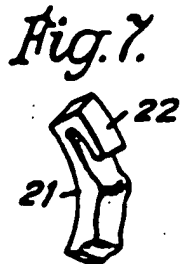
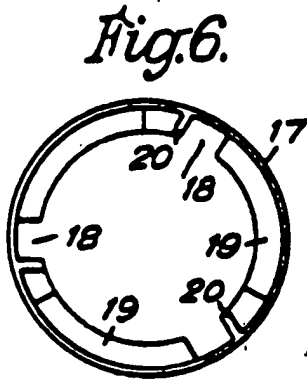
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 Chartered Patent Agents,  
 22, Buckingham Gate,  
 Westminster, S.W.1.



812.980  
2 SHEETS

COMPLETE SPECIFICATION

This drawing is a reproduction of  
the Original on a reduced scale.  
SHEETS 1 & 2



# PATENT SPECIFICATION



Application Date: Nov. 8, 1927. No. 29,942/27.

292,836

Complete Accepted: June 28, 1928.

## COMPLETE SPECIFICATION.

### Improvements in Portable Electric Lamps.

I, BERNHARD ROGGE, of 6, Oranienstrasse, Berlin, S.O., 36, Germany, of German nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to the casings of portable electric lamps in which movement of the switch member simultaneously produces relative movement between the incandescent bulb and the optical system to vary the illumination, so that both operations can be performed with one hand, and has for its object to simplify both the manipulation and the internal construction of such lamps.

The invention consists in this, that the reflector or the top cap or both are directly connected to the switch member and are capable of being slid together with the same, while the incandescent lamp remains stationary.

In the accompanying drawing several constructional examples of the lamp according to the present invention are illustrated. Figure 1 is a side elevation of one constructional form of lamp, Figure 2 a side elevation partly in section at 90° to Figure 1. Figures 3 and 4 and Figures 5 and 6 show corresponding views of two other constructional forms. Figure 7 is a section to an enlarged scale on line A B of Fig. 5. Fig. 8 is a side elevation of a fourth constructional form; Fig. 9 a partial section to an enlarged scale on line C D of Fig. 8 and Fig. 10 a plan view of Fig. 8. Fig. 11 shows a view, partly in section, of a fifth constructional form and Fig. 12 is a detail of Fig. 11 to an enlarged scale.

In the constructional forms shown in Figs. 1 to 7 on the main part 1 of the casing, which contains the incandescent lamp 2 and the battery 3, the top cap 4 with the covering disc 5 is longitudinally slidable. This covering disc 5 may be either a lens or in many of the constructional forms a simple disc of glass or the like, which has no effect on the direction of the rays of light. In all these constructional forms the switching member has the form

of a knob 6 located at the side of the part 1 of the casing and capable of being slid longitudinally of the casing.

In the lamp shown in Figs. 1 and 2 the connection between the top cap 4 and the knob 6 is established in accordance with the invention in a simple manner by a strip 7 which can be slipped resiliently over the knob 6. On the knob 6 being pushed upward, the contact spring 8 which is connected to it will make contact, shortly after the commencement of the motion of the knob, with the second contact spring 9 and will close the circuit. During the further displacement of the knob 6 the contact will remain closed, as the springs 8, 9 remain in contact with one another (Fig. 2). As long as the sliding motion of the knob 6 continues, the cap 4 with the covering disc 5, which in the present instance influences the beam of rays and must therefore be a lens, will take part in the sliding motion, thereby causing the shape of the beam to change. The reflector 10 is fixed to the part 1 of the casing and does not take part in the displacement of the cap 4.

In the constructional form shown in Figs. 3 and 4 the reflector 10 is slidable (see Fig. 3). For this purpose the reflector is fixed to the contact spring 8 which is attached to the knob 6. The manner in which this lamp operates will be readily understood from the drawing. The cap 4 with the covering disc 5 which in this case need not be a lens is simply slipped on to the part 1 of the casing and does not take part in the displacement.

In the lamp shown in Figs. 5 to 7 the reflector 10 is fixed to the top cap 4. The cap is connected to the part 1 of the casing by means of a bayonet catch device 11. On sliding the knob 6 with the contact spring 8 which coacts with the second contact spring 9 and during the whole duration of the sliding motion of the knob 6 remains in contact with the said spring 9, the cap 4 with the covering disc 5, which need not be a lens, and with the reflector 10 is displaced relatively to the incandescent lamp 2.

A particular advantage of this constructional form is that, when the incan-

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Price 4s 6d.

descent lamp 2 is switched on, the top cap 4 is locked to the part 1 of the casing, so that it cannot slip down inadvertently. This locking of the parts is effected by the shank 12 of the knob 6 being provided with a collar 12<sup>1</sup> which is capable of engaging in a recess 14 at the end of a transverse arm of the slot 11. When the lamp is switched off, the collar 12<sup>1</sup> can be pushed into a recess 14<sup>1</sup> in the casing 1, whereupon, by turning the cap 4 and then withdrawing it, the cap can be removed from the casing 1. When the knob 6 with the cap is slid longitudinally of the casing for switching on the lamp, the collar 12<sup>1</sup> can no longer be pressed into the recess 14<sup>1</sup>, so that the cap is locked. For the rest through the use of the bayonet catch arrangement 11 the cap 4 is secured from being inadvertently turned off, even in the position shown in Figs. 5 and 6 in full lines, through those parts of the cap 4 which are near the knob 6, 12 being under a certain tension, as long as the cap is being slid over the knob and has not as yet reached its end position, which tension is released in the said position by the provision of the small recess 14 (Fig. 7).

In the constructional form shown in Figs. 8 and 9 an apron 18 is provided on the lens cap 4, a crank slot 11 in which engages over the contact knob 6 of the torch. The apron 18 contains a second slot 19, in which a locking pin 20 engages. This locking pin is supported by a spring 21 within the casing and can therefore be forced out of the slot 19 for the purpose of taking off the cap 4. For taking off the lens cap, it is grasped with one hand, the locking pin 20 being pressed into the casing by one finger of the same hand. As the outer end of the pin is rounded, the cap can first be turned about the axis of the casing, whereupon, after the knob 6 has entered the axially directed part of the slot 11, the cap with the lens can be withdrawn.

To prevent the lens turning in the cap, when the latter is being removed, which would tend to loosen it, the otherwise round lens has an octagonal flange 22, which fits exactly into the octagonal flange 23 of the lens cap 4.

In the lamp shown in Figs. 11 and 12 which is intended to be used more particularly for a stand lamp but can also be suspended to a bicycle or the like, the switch member 6<sup>1</sup> is in the form of a screw nut with a spindle 14. To the spindle 14 the reflector 10 with the covering disc 5 is fixed by means of an angle piece 15. At the rear end of the reflector 10 is a cylinder 16 on which is a contact 8<sup>1</sup> in the form of a rail, the second contact 9 which is in the form of a spring being fixed to a partition 17 in the casing 1. On the nut 6<sup>1</sup> being turned, the spindle 14 with the reflector 10 and the parts fixed to the same is displaced. This movement of the parts first establishes contact between the contact members 8<sup>1</sup> and 9 and then influences the beam of rays emanating from the incandescent lamp 2 in the manner indicated in the Fig. 11. In this lamp as well, the establishment of the contact and the alteration in the cone of rays by means of the switch member 6<sup>1</sup> is effected with only one hand.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A portable electric lamp with adjustable illumination, characterised by the feature that the reflector or the top cap or both parts are directly connected to the switch member and are capable of being displaced together with the latter, while the incandescent lamp remains stationary.

2. A portable electric lamp as claimed in Claim 1 characterised by the feature that in an extension of the lens cap, which extension engages over the contact member, a locking slot is provided and in the lamp casing a resilient locking pin.

3. A portable electric lamp as claimed in Claims 1 and 2, characterised by a round lens having an octagonal flange.

4. The improved portable electric lamp, substantially as described and as illustrated in and by the accompanying drawings.

Dated this 4th day of November, 1927.

MARKS & CLERK.

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Fig. 1.

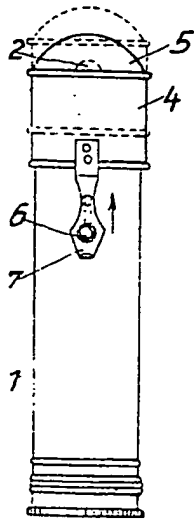


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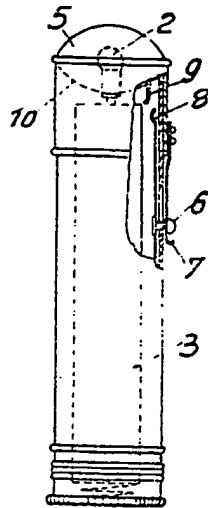


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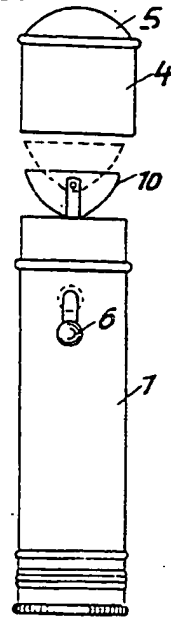


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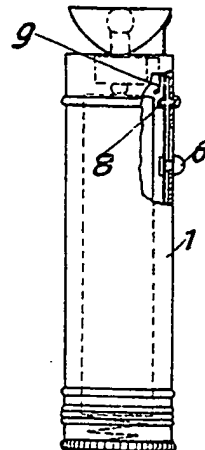


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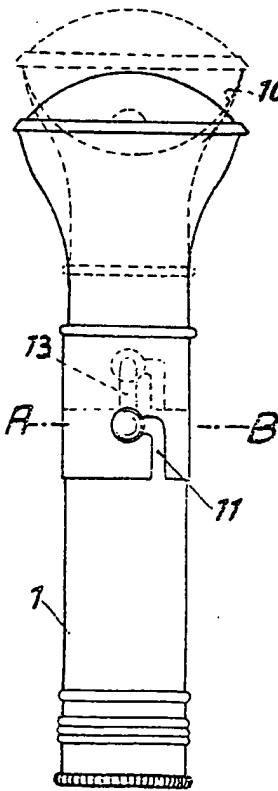


Fig. 6.

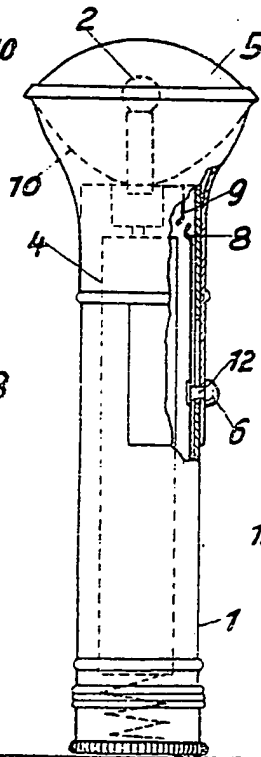
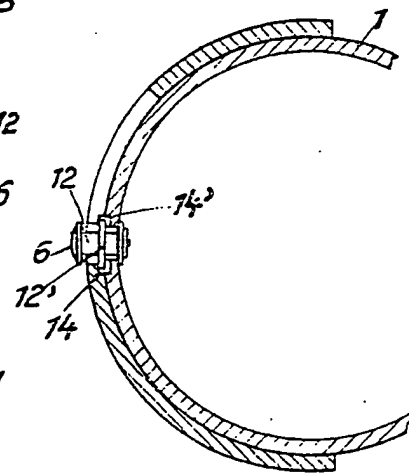


Fig. 7.



4  
6  
18  
2  
F.  
22  
5

Fig. 8.

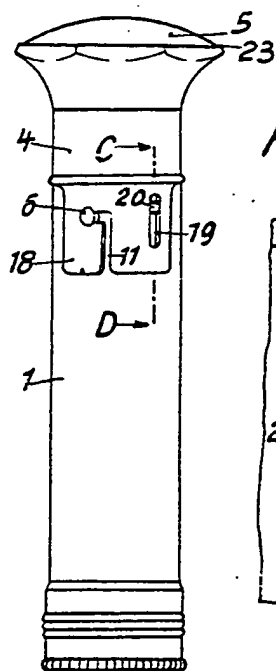


Fig. 9.

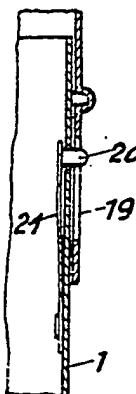


Fig. 11.

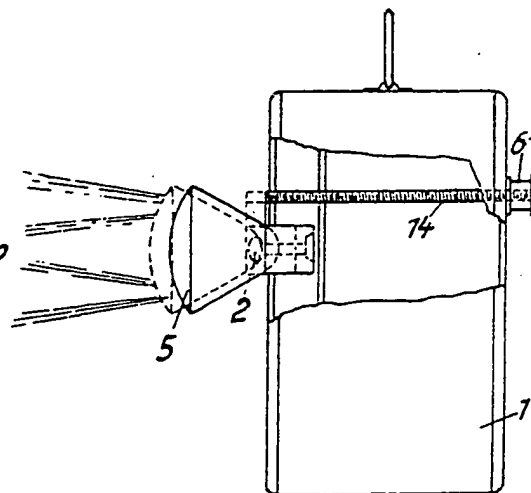


Fig. 10.

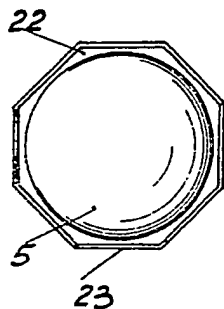


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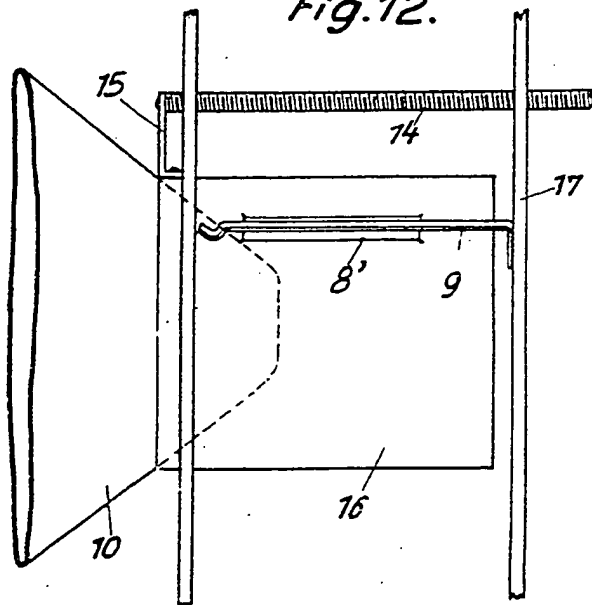


Fig. 1.

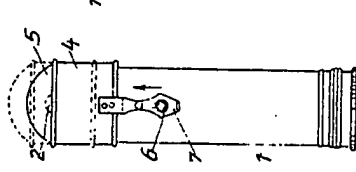


Fig. 2.

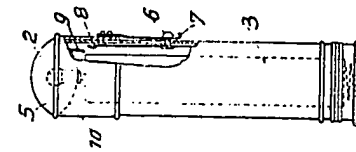


Fig. 3.

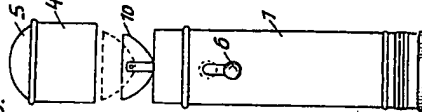


Fig. 4.

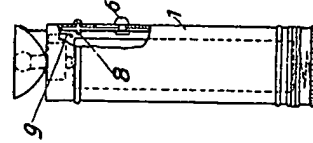


Fig. 5.

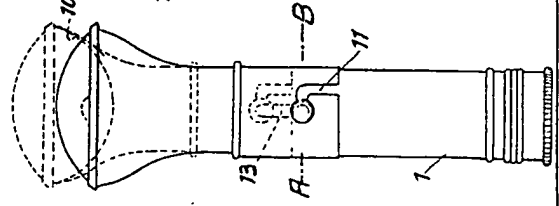


Fig. 6.

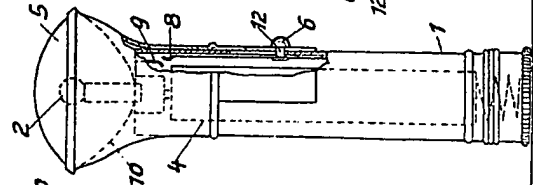


Fig. 7.

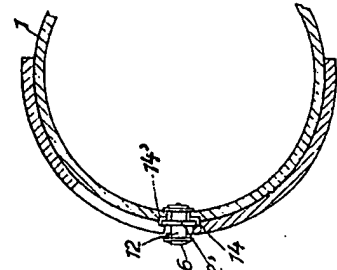


Fig. 8.

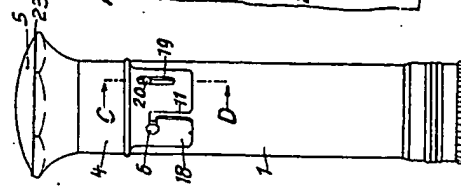


Fig. 9.

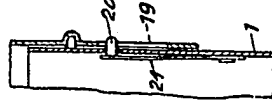


Fig. 11.

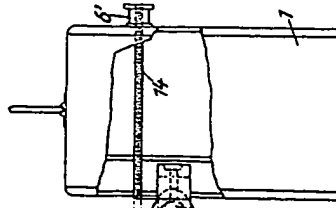


Fig. 12.

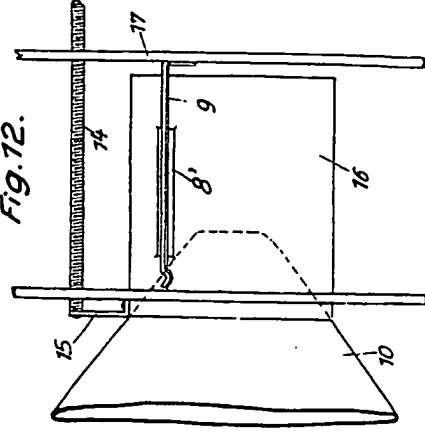
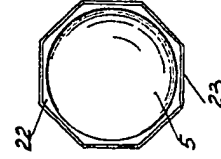


Fig. 10.



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# (12) UK Patent Application (19) GB (11) 2 107 038 A

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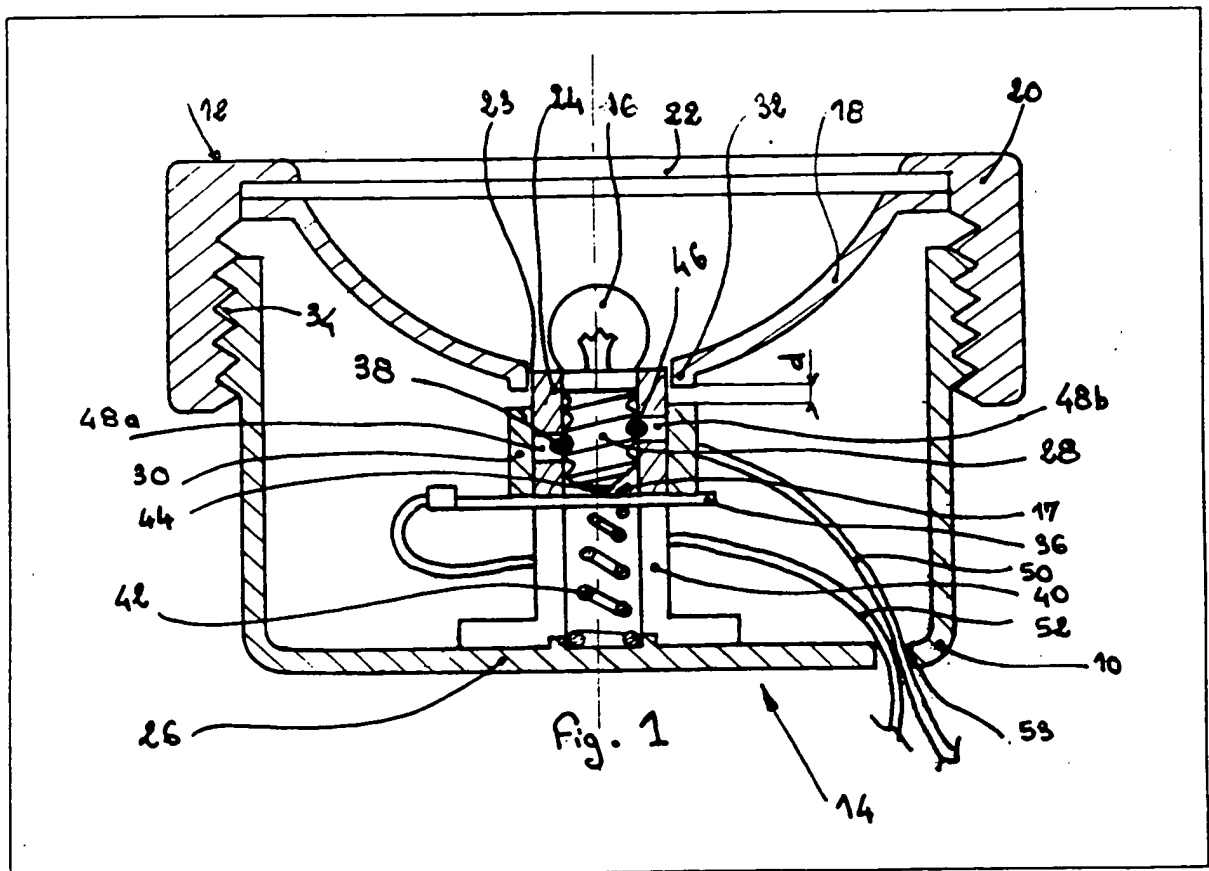
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(33) France (FR)  
(43) Application published  
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F21L 1/00  
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(58) Field of search  
F4R  
(71) Applicants  
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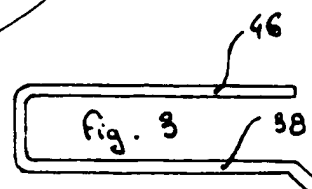
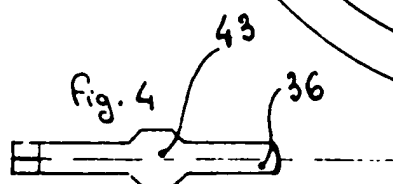
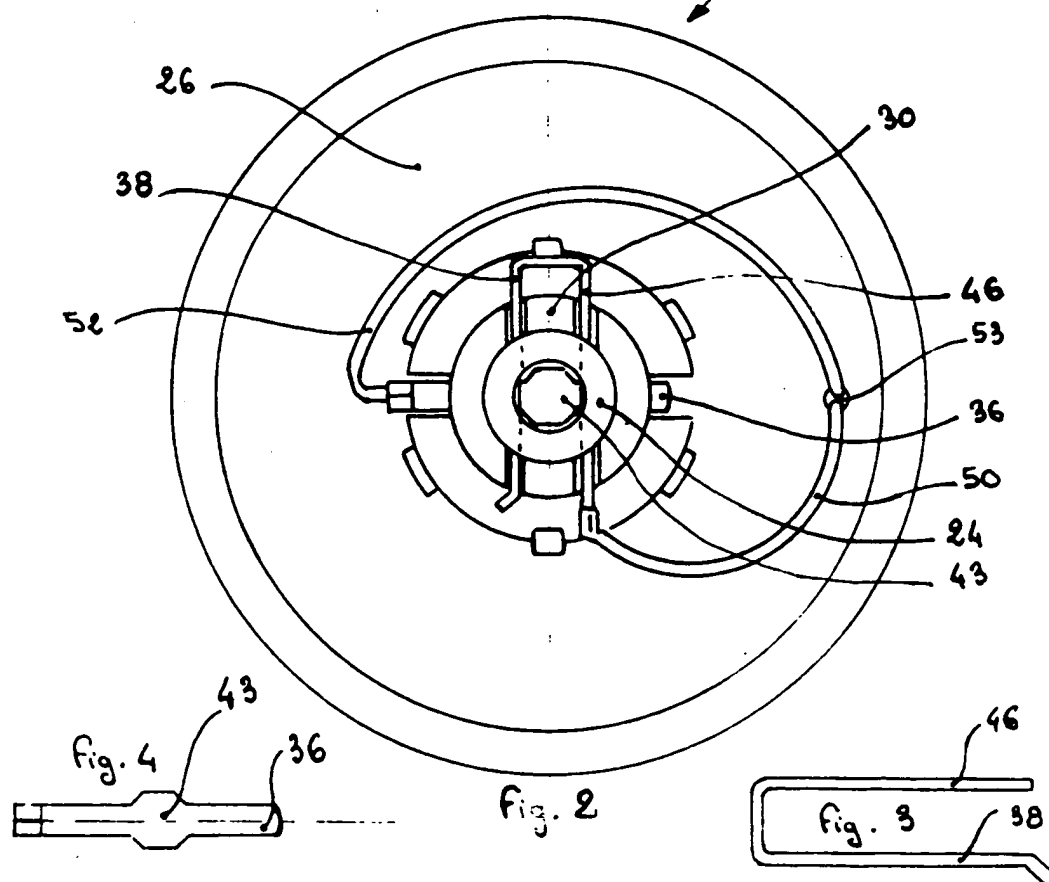
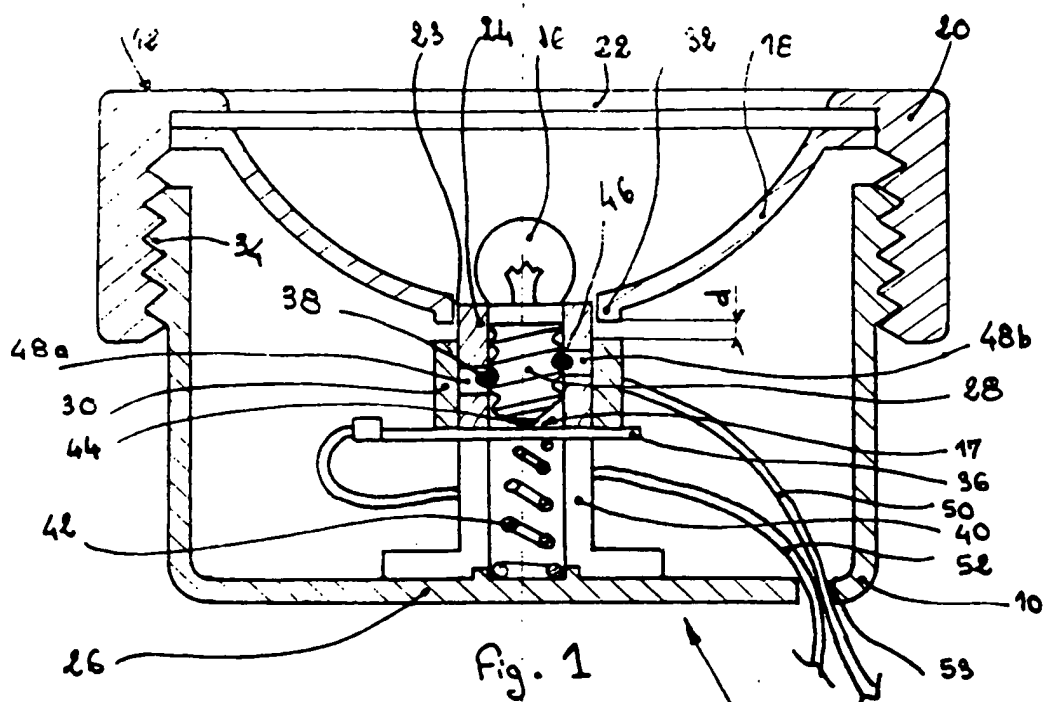
## (54) Improvements in or relating to electric lamps

(57) An electric lamp is described which comprises a first subassembly (12) in which is rigidly secured a reflector (18) and a second subassembly (14) in which is supported a bulb (16) and switching means for connecting the bulb to a power source, the subassemblies being movable relative to one another to move the reflector (18) relative to the bulb (16), the arrangement being

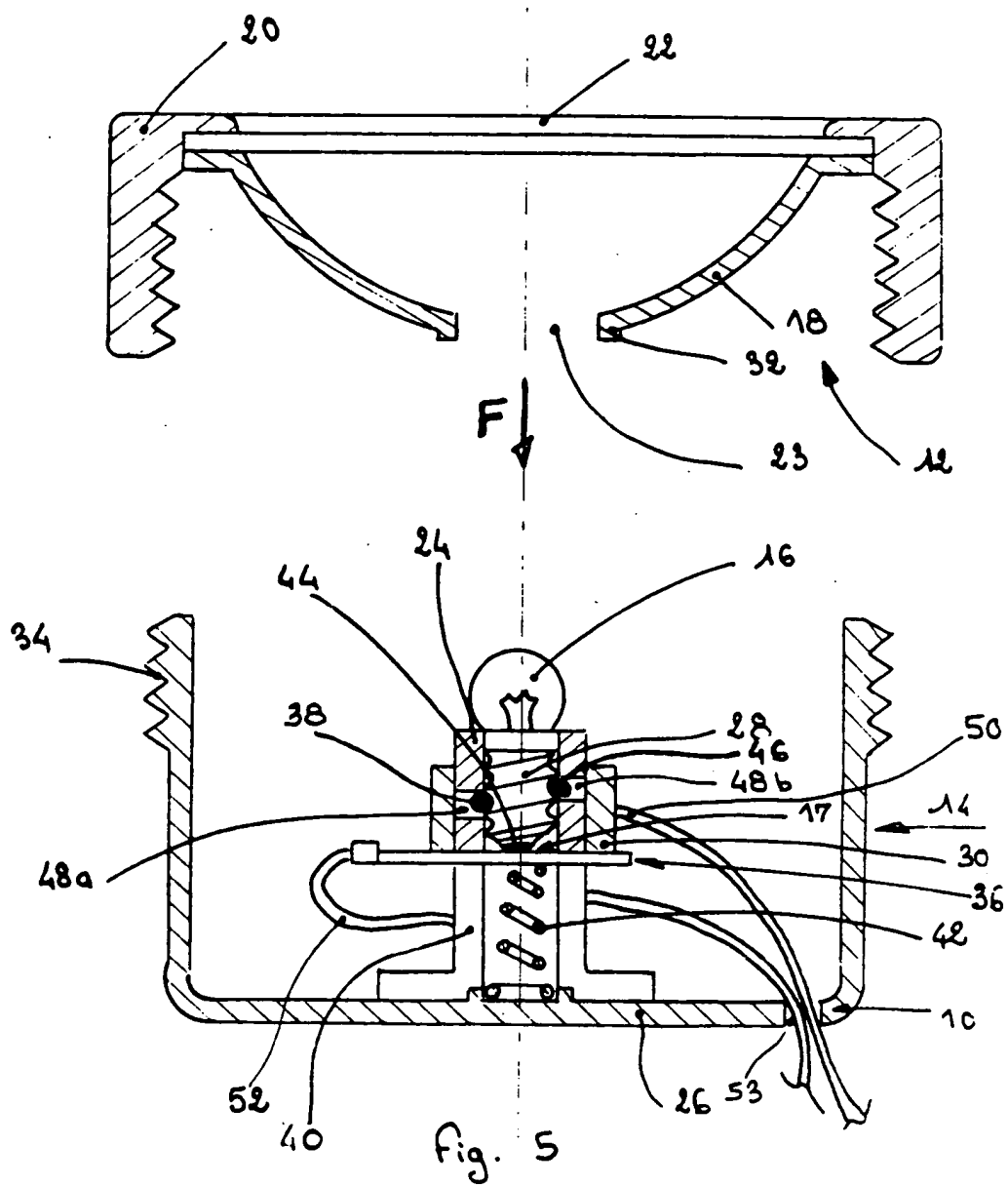
such that, when the reflector is moved relative to the bulb between a first focus adjustment position and a second focus adjustment position, a contact (36) of the switching means biased by resilient means (42) into contact with a connecting terminal (44) of the bulb (16) remains stationary and in contact with the connecting terminal so that power is supplied to the bulb (16) but when the reflector is moved relative to the bulb to position outside the range of positions defined between the first and second focus adjustment positions the contact (36) of the switching means is moved out of contact with the connecting terminal (44) of the bulb against the biasing force of the resilient means (42).



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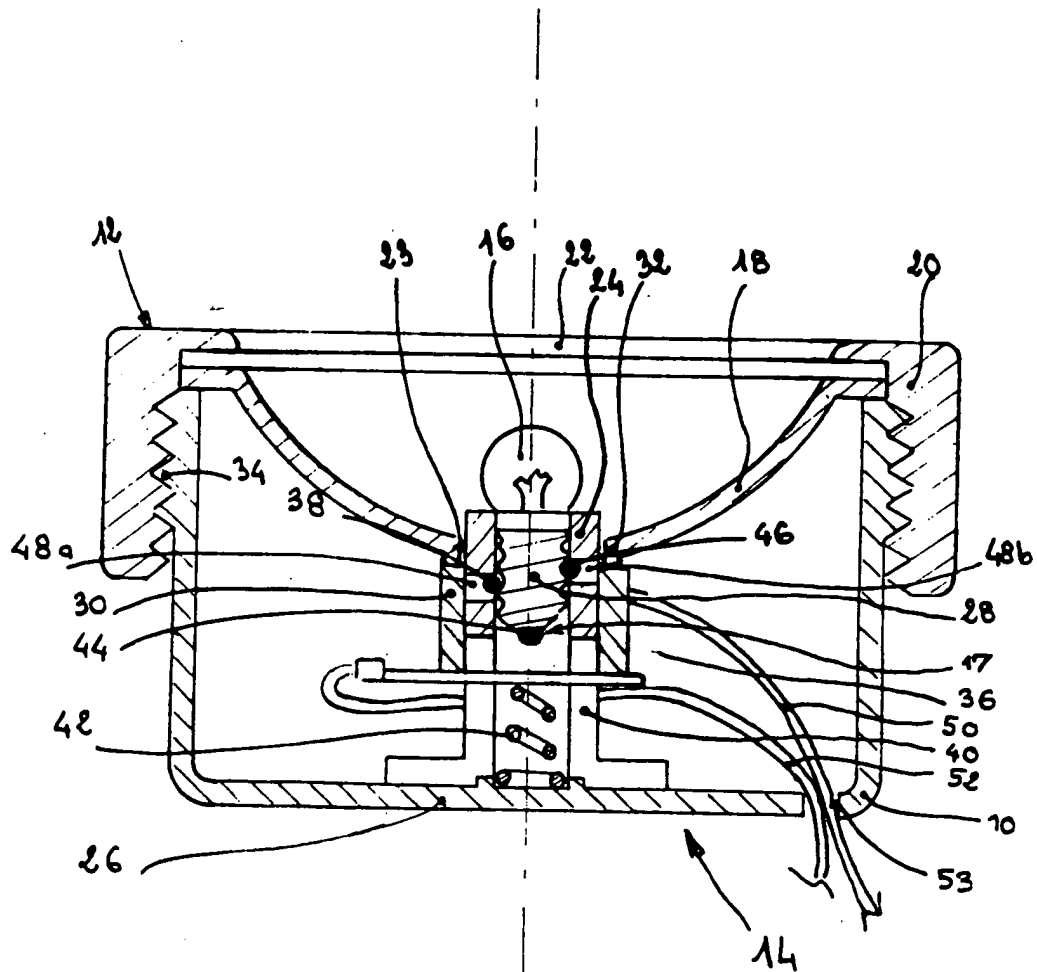


Fig. 6

# SPECIFICATION Improvements in or relating to electric lamps

This invention relates to improvements in or relating to electric lamps comprising a reflector, an electric bulb electrically connected to a power supply by way of a switch and means for controlling both the switch and focus adjustment in accordance with relative movement between the bulb and the reflector.

French Patent Specification 1 430 456 and German Patent Specification 839 828 both disclose a lamp of the above-mentioned kind wherein jointed means are provided for adjusting the focal point and controlling the switch. In each case, the switch has a rotary action which complicates the construction of the common adjusting means. French Patent Specification No. 2 372 382, describes a lamp wherein the switch comprises a movable bulb holder engageable with a fixed contact as a result of movement of the reflector.

It is an object of the invention to provide a reliable lamp which has a simple and cheap switch.

According to the present invention, there is provided an electric lamp comprising a first subassembly in which is rigidly secured a reflector and a second subassembly in which is supported a bulb and switching means for connecting the bulb to a power source, the subassemblies being movable relative to one another to move the reflector relative to the bulb the arrangement being such that, when the reflector is moved relative to the bulb between a first focus adjustment position and a second focus adjustment position, a contact of the switching means biased by resilient means into contact with a connecting terminal of the bulb remains both stationary and in contact with the connecting terminal so that power is supplied to the bulb but when the reflector is moved relative to the bulb to a position outside the range of positions defined between the first and second focus adjustment positions the contact of the switching means is moved out of contact with the connection terminal of the bulb against the biasing force of the resilient means.

In order that the invention may be readily understood, an embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a sectional view of an electric lamp for illumination in accordance with the invention with a switch thereof in a closed position;

Figure 2 is a plan view from above of the lamp of Figure 1 with a first subassembly comprising the reflector removed and without the bulb;

Figure 3 shows a rider providing a connection to a screw cap of the bulb of the lamp;

Figure 4 shows a semi-fixed contact of the switch of the lamp;

Figure 5 is a sectional view similar to Figure 1 but with the first subassembly shown removed from the lamp; and

Figure 6 is a sectional view similar to Figure 1 but with the switch in an open position;

Referring now to the drawings, an electric lamp for illumination, *inter alia* a headlamp for mountaineering or potholing, has a casing 10 divided into two separate subassemblies 12 and 14 adapted to co-operate with one another to operate a switch 17 for switching a bulb 16 on and off and also to serve as a means for concentrating or diffusing the beam emitted by the bulb 16 when the switch 17 is in its closed position.

The subassembly 12 comprises a parabolic reflector 18 which is rigidly secured to a ring 20 made of an electrically insulating material. The inside lateral surface of the ring is screw-threaded so that the ring forms a ring nut to engage an externally screw-threaded end 34 of the casing 10. One end of the ring nut 20 is closed by a cylindrical transparent screen 22 which, when the first and second subassemblies 12 and 14 cooperate, protects the reflector 18 and the bulb 16. A cylindrical aperture 23 through which the bulb 16 can extend is formed through the centre of the reflector 18.

The other subassembly 14 is adapted to support the bulb 16 and the switch 17 associated therewith. A tubular bulb holder 24 is secured to end 26 of the lamp casing 10 by any form of assembly, for example, riveting, sticking or clipping. The outside diameter of the stationary holder 24 is slightly less than the diameter of the reflector aperture 23 and the inside diameter of the bulb holder 24 is substantially the same as that of a metal screw cap 28 of the bulb 26. A semi-fixed electrically insulating sleeve 30 for actuating the switch 17 extends coaxially around the holder 24 and can be moved to a limited extent by an annular shoulder 32 of reflector 18 to open the switch 17 in its limit position.

The bulb holder 24 is made of an electrically insulating material and the bulb 16, which is a conventional commercially available item, is connectable to a power source by means of two electrical contacts 36 and 38 received in the casing 10.

Contact 36 is in the form of a semi-fixed bridge extending transversely across an orifice 40 in holder 24. A compression spring 42 is received coaxially in holder 24 between the end 26 and contact 36 to urge a widened central zone 43 of the contact 36 into engagement with an isolated terminal 44 of the filament of the bulb 16. The switch 17 comprises the bridge-like semi-fixed contact 36 cooperating with the sleeve 30 in dependence upon the axial position of the reflector 18. When a person begins to screw the subassembly 12 on to the screw-threaded end 34 of the sub-assembly 14, a lost motion distance of variable length  $d$  is left between the annular shoulder 32 of the reflector and the sleeve 30. Switch 17 is then in the closed state or position because the spring 42 keeps the bridge contact 36 in engagement with the bulb terminal 44. After the lost motion distance has been taken up by

movement of sub-assembly 12 as it is screwed further onto sub-assembly 14, the reflector 18, as it moves, moves the sleeve 30 towards a position remote from the contact bridge 36 against the force of spring 42, thus separating the contact 36 from bulb terminal 44 so that the switch 17 is in the open condition or state (Figure 6).

The other contact 38 comprises a rider 46 or hairpin-like member for earthing the metal screw cap 28 which forms the other terminal of the bulb 16. The rider 46 extends perpendicularly of the contact 36 and takes the form of a horseshoe-shaped conductive metal wire. The straight arms of the rider 46 are disposed in a pair of recesses 48a and 48b formed in the holder 24 and the radial gap left between the two arms of the rider 46 corresponds substantially to the base diameter pitch of the bulb cap 28. There is a small offset between the recesses 48a and 48b corresponding to one-half of the pitch of the screw-thread of the bulb cap 28. The rider 46 and the contact 36 are connected to two electrically conductive wires of cables 50 and 52 which extend through an orifice 53 into the casing 10, to connect the lamp 16 to an external power supply, for example, a battery (not shown). In addition to providing the electrical connection between the bulb cap 28 and, for example, one pole of the battery, the rider 46 locates the bulb 16 securely in the holder 24, the inside lateral surface of which is not screw-threaded. Where the power supply is a battery, a conventional type battery casing (not shown) will be provided, for example a casing of the type disclosed in French Patent Specification No. 2 305 684.

The lamp operates in the following manner.

The subassembly 12 is removed from the subassembly 14 as shown in Figure 5 to allow the bulb 16 to be placed in the holder 24 of the subassembly 14 by rotation of the bulb cap 28 on the rider 46 once the rider 46 has been positioned securely in the recesses 48a and 48b in the holder 24. The bulb 16 is rotated until the terminal 24 engages the contact zone 43 of the bridge 36. The opposite surface of the bridge is acted on by the spring 42 and the switch 17 is then in its closed position so that bulb 16 is energized and lights up.

The reflector subassembly 12 is then fitted to the subassembly 14, in the direction indicated by arrow F in Figure 5, by screwing the ring nut 20 onto the screw-threaded end 34 of the casing 10 (Figure 1). The helical movement of the ring nut 20 causes the reflector 18 to move towards the sleeve 30. The lost motion distance  $d$  between reflector shoulder 32 and sleeve 30 decreases proportionately as the ring nut 20 is screwed further onto the screw-threaded end 34. The reduction in the distance  $d$  causes the focal point of the parabolic reflector 18 to be moved towards the bulb 16 which remains stationary.

Consequently, there is a progressive concentration of the light beam emitted by the bulb 16, the concentration reaching a maximum when all the lost motion distance or backlash  $d$  has been taken up, at which point the sleeve 30 will be caused by

the reflector 18 to engage the contact bridge 36.

If the ring 20 is screwed further onto the screw-threaded end 34, the sleeve 30 and contact bridge 36 are moved through a reduced distance against the force of compression spring 42. Because the bulb 16 remains stationary, this movement of the sleeve 30 causes the terminal 44 to disengage from the contact bridge 36 so that switch 17 is in its open state or condition when the reflector 18 is in its limit position as shown in Figure 6, causing the bulb 16 to go out. The spring 42 is at maximum compression when the switch 17 is in its open state.

The above sequence of operations is reversed to switch on the bulb 16. Unscrewing the ring 20 causes the sleeve 30 to move under the biasing force of the spring 42 to bring the contact bridge 36 into contact with the contacting terminal 44. Switch 17 is then in the closed state and the bulb 16 is alight.

Further unscrewing of ring 20 moves the focal point of reflector 18 further away from the stationary bulb 16. Consequently, there is a progressive diffusion of the light beam emitted by the bulb 16.

## CLAIMS

1. An electric lamp comprising a first subassembly in which is rigidly secured a reflector and a second subassembly in which is supported a bulb and switching means for connecting the bulb to a power source, the subassemblies being movable relative to one another to move the reflector relative to the bulb, the arrangement being such that, when the reflector is moved relative to the bulb between a first focus adjustment position and a second focus adjustment position, a contact of the switching means biased by resilient means into contact with a connecting terminal of the bulb remains both stationary and in contact with the connecting terminal so that power is supplied to the bulb but when the reflector is moved relative to the bulb to a position outside the range of positions defined between the first and second focus adjustment positions the contact of the switching means is moved out of contact with the connection terminal of the bulb against the biasing force of the resilient means.

2. A lamp according to claim 1, wherein the bulb is received in a holder secured to the second subassembly and the contact of the switching means is in the form of a bridge member extending across an orifice in the holder.

3. A lamp according to claim 2, wherein the resilient means for biasing the contact of the switching means into contact with the bulb connecting terminal comprises a compression spring disposed in the holder between an end of a casing of the second subassembly and the switching means contact.

4. A lamp according to claim 1 or 2 or 3, wherein an insulating material sleeve 30 is disposed between the switching means contact

and the reflector and is normally spaced from the reflector by a distance equal to the distance between the first and second focus adjustment positions.

- 5 5. A lamp according to claim 4, wherein the sleeve extends around the holder and interferes with the relative movement of the reflector and the bulb to move the switching means contact out of contact with the bulb connection terminal when  
10 the bulb is moved relative to the reflector to a position outside the range defined by the first and second focus adjustment positions.

- 15 6. A lamp according to any one of claims 2 to 5, wherein the holder is made of an insulating material and a conductive rider disposed in recesses in the holder provides electrical

connection for a metal screw cap of the bulb and serves to retain the bulb in the holder.

- 20 7. A lamp according to claim 6, wherein the rider is in the form of a U-shaped metal wire, the distance between the arms of the U-shaped metal wire corresponding substantially to the base diameter pitch of the bulb screw cap.

- 25 8. A lamp according to claim 6 or 7, wherein the recesses in the holder are offset from one another by a distance corresponding to one-half the pitch of the thread of the bulb screw cap.

- 30 9. An electric lamp substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

10. Any novel feature or combination of features described herein.

(B i b l i o g r a p h i c a l   D a t a)

Utility Model Gazette

Publication No.      5-14620

Publication Date :   November 21, 1930

Application No.      5-24839

Application Date :   August 27, 1930

Title of Utility Model :   A torch lamp

Creator(s) :            Yasutake Sato in Japan

Applicant(s) :          Yuasa Battery Co., Ltd. in Japan

.....  
(Explanatin of Utility Model, Scope of claim and drawing follow.)

願書番號昭和五年第二四八三九號  
出願 昭和五年八月二十七日  
公告 昭和五年十一月二十一日

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考案者 佐藤 安 敬  
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出願人 湯淺蓄電池製造株式會社

## 懷中電燈

圖面ノ略解 第一圖ハ本案ノ縱斷面圖第二圖ハ本案主要部ヲ開示セル斜視圖第三圖ハ第一圖A—A線上ノ橫斷面而圖第四圖ハ第二圖内部分品ノ外觀正面圖ニシテ圖中同一符號ハ同一部分ヲ示ス

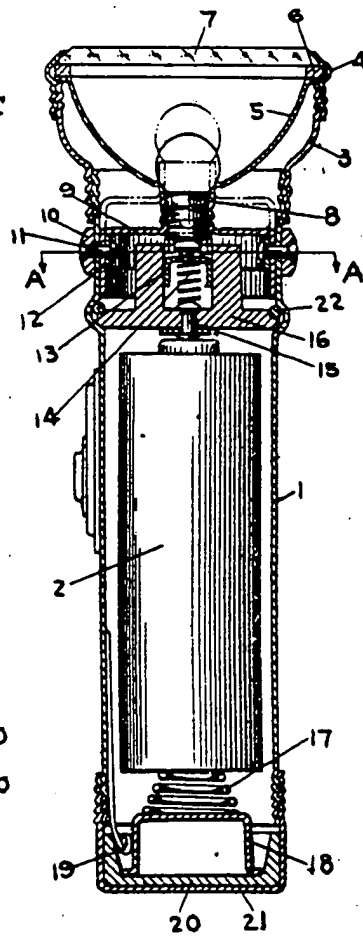
實用新案ノ性質、作用及效果ノ要領 本案ハ電池外筒ニ取付ケタル「リング」ノ回轉ニ依リ燈具ノ伸縮ヲナサシメテ反射鏡ニ對スル電球ノ位置ヲ任意ニ調節シ得ル如クナシタル懷中電燈ニ係リ圖中「ハ」金屬製外筒ニシテ其ノ中ニ電池ヲ收容ス「ハ」エボナイト」等ノ絶緣物ニテ作レル絶緣臺ニシテ彈性缺環「ヨ」リテ外筒内ニ緊定シ絶緣臺「ハ」接觸片「ヲ」挿込ミ其ノ上ニ螺線發條「ヲ」取付ケ該發條ニハ電球受「ヲ」裝冠シ電球「ヲ」常ニ押壓シ且伸縮スル如クナシ絶緣臺「ハ」上方ニハ第四圖ニ示スカ如キ電球取付函「ヲ」置キ其ノ内部ニハ座環「ヲ」嵌入セシム「ハ」外筒ニ嵌入セル回轉自在ノ「リング」ニシテ「ハ」以テ第四圖電球取付函「ハ」側壁ニ穿テタル傾斜溝「ハ」第二圖外筒「ハ」ニ穿テタル誘導溝「ハ」及第三圖座環「ヲ」貫通シテ之ヲ銑着セリ「ハ」反射鏡受ニシテ圖ノ如ク螺着シ押へ具「ハ」ト共ニ反射鏡「ハ」「レンズ」「ハ」及「レンズ」受「ハ」螺着ス又第四圖廻止メ溝「ハ」電球取付函「ハ」側壁ニ設ケ之ヲ外筒ノ突子「ハ」ニ嵌入シ電球取付函「ハ」カ「ハ」「リング」ノ旋廻ノ際上下遊動ヲナス如クセリ又外筒底部ニハ蓋「ハ」内部ニ絶緣函「ハ」收容シ其ノ内側ニ彈性發條「ヲ」固着シタル金屬函「ハ」ヲ裝入シ蓋「ハ」螺着セハ同時ニ絶緣物ニテ被覆セル金屬板「ハ」一端ハ金屬函「ハ」ニ接觸シ他端ハ開閉器ニ連結ス而シテ電池「ハ」ノ一極ハ接觸片「ハ」發條「ハ」電球受「ハ」ヲ經テ電球「ハ」ニ通シ他極ハ前述ノ如ク彈性發條「ハ」金屬函「ハ」金屬片「ハ」及開閉器「ヲ」經テ外筒「ハ」「リング」「ハ」銑「ハ」座環「ハ」電球取付函「ハ」ヲ經テ電球「ハ」ニ至リテ回路ヲ形成ス尙「ハ」「リング」「ハ」回轉セハ電球取付函「ハ」上下シ從テ電球「ハ」ノ上下遊動ヲナサシメ反射鏡「ハ」ニ對スル電球ノ位置ヲ調節スルモノトス

本案ニヨルトキハ電池ヲ一定位置ニ保持シ且反射鏡ヲ動かスコトナク單ニ「リング」ヲ廻轉スルコトノミニヨリ反射鏡ヲ調節シ得ルヲ以テ其ノ操作至極便利ニシテ此種他電燈ノ如ク電池ノ底部ヲ無理ニ壓スルノ必要ナク各接觸部ハ完全ニ其ノ接觸ヲ保持スルノ效果アリ

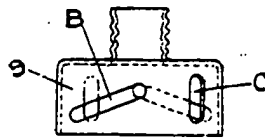
登録請求ノ範圍 圖面並ニ説明ニ示スカ如ク外筒①ノ内部ニ絶緣蓋②ヲ座セシメ其ノ中央孔ニ螺線發條③ヲ收容シテ電球根部ヲ伸縮自在ニ壓スル如クシ電球根部④ハ電球取付函⑤ニ螺着シ該函ニハ傾斜溝⑥ト廻リ止メ溝⑦ヲ設ケ外筒①ニ嵌入セル「リング」⑧ノ廻轉ニ伴ヒ電球取付函ハ上下遊動シ猶底蓋⑨ヲ外筒①ニ螺着スルコトニヨリテ金屬函⑩カ開閉器ニ連結セル金屬片⑪ニ接觸シ回路ヲ作ル如クナセル懐中電燈ノ構造

實用新案出願公告第一四六二〇號

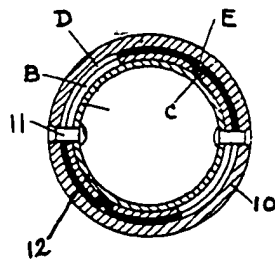
圖一第



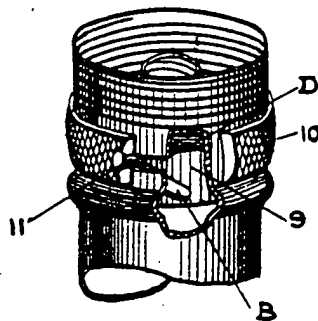
圖四第



圖三第



圖二第





Summarized Translation of Citation 2b

(Relevant parts only)

Japanese Utility Model Publication (KOKOKU) No. 5-14620  
published Nov. 21, 1930

Japanese Utility Model Application No. 5-24839 filed  
Aug. 27, 1930

Applicant: YUASA BATTERY CO., LTD., Osaka, Japan

Inventor: Yasutaka SATO, Japanese citizen

Convention priority claimed: None

Title of Invention: A flash lamp

Detailed Description of Invention:

The present invention relates to a flash lamp in which a lighting means is elongated by rotating a ring attached onto an outer casing of a battery so as to adjust desirably a position of a bulb with respect to a reflective mirror. Reference numeral 1 is a metallic outer casing which holds a battery (2) therein. 16 is an insulating base made of ebonite. The insulating base is fixed in the outer casing by an elastic ring (22). A contact piece (15) is inserted into the insulating base (16). A spiral spring (14) is attached onto the contact piece. A bulb receiver (13) is mounted on the spiral spring which stretches to always push it. As seen from Fig. 4, a casing (9) mounting a bulb is disposed above the insulating base (16), and a seating ring (12) is fitted into the casing (9). 10 is a rotatable ring

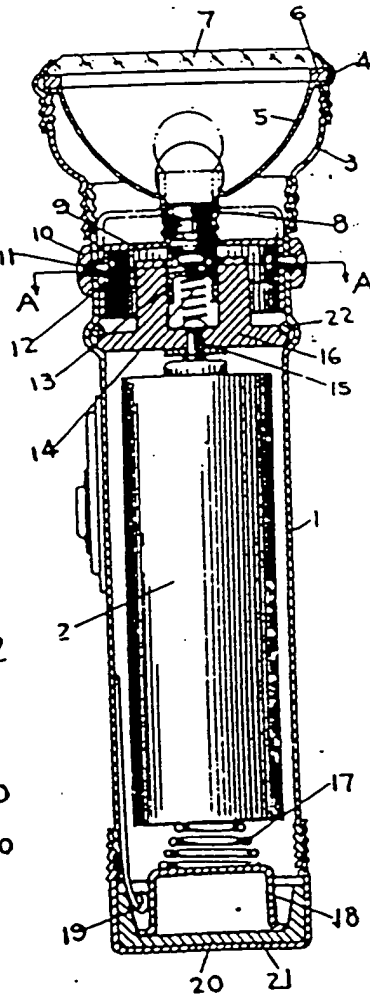
which engages with the outer casing. The ring (10) is riveted on the seating ring (12) in Fig. 3 with the rivet (11) through a guide groove (D) formed on the outer casing (1) in Fig. 2 and an inclined groove (B) formed on a side wall of the casing (9) mounting the bulb in Fig. 4. 3 is a reflective mirror receiver which is screwed as in the figure. A pressing member (4), a reflective mirror (5), a lens (7), and a lens receiver (6) are screwed. As in Fig. 4, a rotation stop groove (C) is formed on a side wall of the casing mounting the bulb. A projection piece (E) engages with the rotation stop groove. Thus, during the rotation of the ring (10), the casing (9) attaching the bulb moves upwardly and downwardly.

實用新案出願公告第一四六二〇號

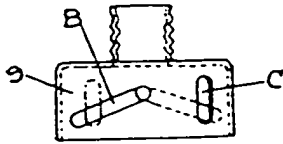
本発明ニヨルトキハ電池ヲ一定位置ニ保持シ且反射鏡ヲ動かスコトナク單ニ「リング」ヲ廻轉スルコトノミニヨリ反射鏡ヲ調節シ得ルヲ以テ其ノ操作至極便利ニシテ此種他電燈ノ如ク電池ノ底部ヲ無理ニ壓スルノ必要ナク各接觸部ハ完全ニ其ノ接觸ヲ保持スルノ效果ヲ得ル

登録請求ノ範圍 圖面並ニ説明ニ示スカ如ク外筒(1)ノ内部ニ絶縁環(16)ヲ座セシメ其ノ中央孔ニ螺線發條(17)ヲ收容シテ電球根部ヲ伸縮自在ニ爲スル如クシ電球根部ニハ電球取付筒(18)ニ螺着シ該筒ニハ傾斜溝(19)ト廻止溝(20)ヲ設ケ外筒(1)ニ嵌入セル「リング」(10)ノ廻轉ニ作シ電球取付筒ハ上下運動シ蓋底蓋(21)ヲ外筒(1)ニ螺着スルコトニヨリテ金屬筒(18)カ閉閉器ニ連結セル金屬片(19)ニ接觸シ回路ヲ作ル如クナセル電燈ノ構造

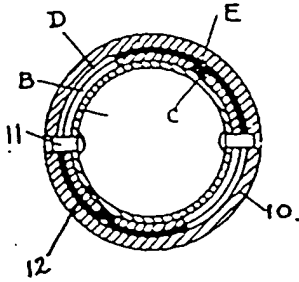
圖一第 Fig.1



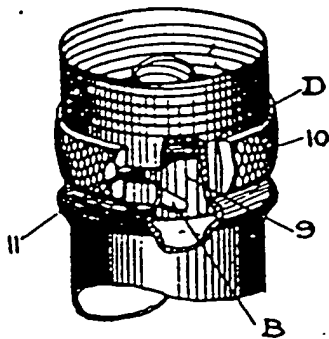
圖四第 Fig.4



圖三第 Fig.3



圖二第 Fig.2



the insulating base (16), and a seating ring (12) is fitted into the casing (9). 10 is a rotatable ring

(B i b l i o g r a p h i c a l   D a t a)

Utility Model Gazette

Publication No.   14-19704

Publication Date : December 14, 1939

Application No.   13-8334

Application Date : March 31, 1938

Title of Utility Model : A torch lamp

Creator(s) :        Teizo Koichi in Japan

Applicant(s) :      Same as the above

.....  
(Explanatin of Utility Model, Scope of claim and drawing follow.)

昭和十四年 實用新案出願公告第一九七〇四號

第二百類 四、白熱電燈

願書番號昭和十三年第八三三四號  
出願 昭和十三年三月三十一日  
公告 昭和十四年十二月十四日

東京市蒲田區安方町二六八番地 市 貞 三  
出願人 考案者 古  
東京市赤坂區溜池町五番地 市 義 治  
代理人 辨理士 樽

懷中電燈

圖面ノ略解 圖ハ本案品ノ一部ヲ切缺ケル側面圖ナリ

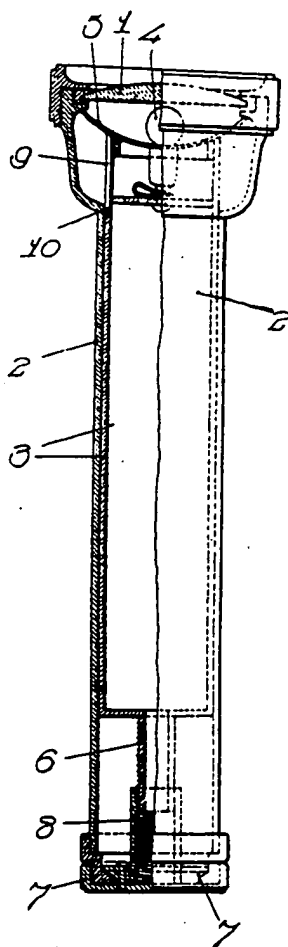
實用新案ノ性質、作用及效果ノ要領 本實用新案ハ懷中電燈ノ改良ニ係ルモノニシテ前部ニ「レンズ」(1)ヲ有スル外筒(2)内ニ内筒(3)ヲ設ケ該内筒(3)ノ前部ニ電球(4)ヲ有スル反射板(5)ヲ取付ケ後部ニ螺子筒(6)ヲ設ケ之レヲ外筒(2)ノ後部ニ嵌合セル廻轉環(7)ノ螺子筒(6)ニ螺合セシメ更ニ内筒(3)ニ長孔(8)ヲ設ケ該長孔(8)ニ外筒(2)ノ内方ヨリ出セル「ピン」(9)ヲ遊嵌セシメテ成ルモノトス

本考案ハ上述ノ如クナルヲ以テ廻轉環(7)ヲ廻轉スルコトニヨリ螺子筒(6)ヲ廻轉シコレニ螺合セル螺子筒(6)ヲ進退セシメ以テ内筒(3)ヲ容易ニ前後ニ移動セシメ得ヘク從テ電球(4)及反射板(5)ハ「レンズ」(1)トノ距離ヲ變化セシメ焦點距離ヲ遠近自在ニ調節シテ電球(4)ノ照明ヲ大小自由ニナサシメ得ラルル等實用上有效適切ナルモノトス

登録請求ノ範圍 圖面ニ示ス如ク前部ニ「レンズ」(1)ヲ有スル外筒

(2)内ニ内筒(3)ヲ設ケ該内筒(3)ノ前部ニ電球(4)ヲ有スル反射板(5)ヲ取付ケ後部ニ螺子筒(6)ヲ設ケ之レヲ外筒(2)ノ後部ニ嵌合セル廻轉環(7)ノ螺子筒(6)ニ螺合セシメテ成ル懷中電燈ノ構造

(特許局發行)



Summarized Translation of Citation 2a

(Relevant parts only)

Japanese Utility Model Publication (KOKOKU) No. 14-19704  
published Dec. 14, 1939

Japanese Utility Model Application No. 13-8334 filed  
Mar. 31, 1938

Applicant: Teizo FURUICHI, Japanese citizen

Inventor: the same with the applicant

Convention priority claimed :None

Title of Invention: A flash lamp

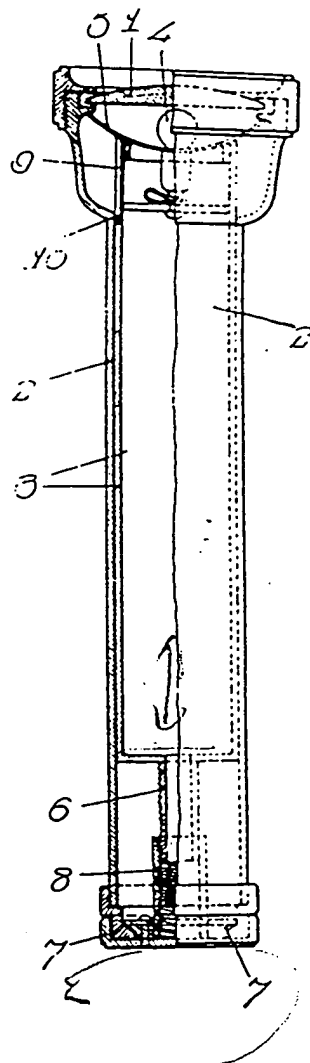
Detailed Description of Invention:

An outer casing (2) is provided with a lens (1) in a front portion thereof, and provided with an inner casing (3) therein. The inner casing (3) is provided in a front portion thereof with a reflective plate (5) having a bulb (4), and in a rear portion thereof with a threaded cylinder (6). The threaded cylinder (6) is screwed into a threaded cylinder (8) of a rotating ring (7) which is engaged with a rear portion of the outer casing (2). Further, the inner cylinder is provided with an elongated aperture (9). The elongated aperture (9) is movably engaged with a pin which projects from an inner side of the outer casing (2).

The rotating ring (7) is rotated to rotate the threaded cylinder (8), and the threaded cylinder (6) screwed into the threaded cylinder (8) is moved

frontward and rearward. Thus, the inner casing (3) can be easily moved frontward and rearward, a distance between the bulb (4) and the reflective plate (5), and the lens (1) is changed so as to adjust a focus distance far and near, and a dimension of an illumination of the bulb (4) is freely controlled.





— 860 —

... (5), and the threaded cylinder (6) screwed into the threaded cylinder (8) is moved



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification<sup>5</sup> :

F21L 7/00

A1

(11) International Publication Number:

WO 93/16323

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19 August 1993 (19.08.93)

(21) International Application Number: PCT/US93/01035

(22) International Filing Date: 4 February 1993 (04.02.93)

(30) Priority data:

07/832,857

7 February 1992 (07.02.92)

US

(71) Applicant: MAG INSTRUMENT, INC. {US/US}; 1635 South Sacramento Avenue, Ontario, CA 91761 (US).

(72) Inventor: MAGLICA, Anthony ; 230 Peralta Way, Anaheim, CA 92807 (US).

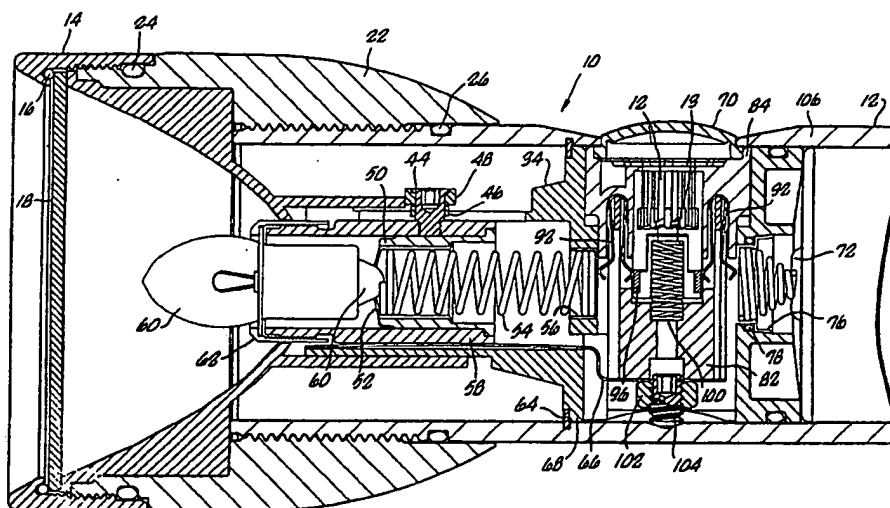
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(54) Title: PORTABLE FLASHLIGHT



## (57) Abstract

A flashlight (10) has a switch housing in between the battery compartment and reflector. The neck of the switch housing holds a lamp support (58) at a central position within a reflector. An O-ring on the rear of the switch housing seals the battery compartment. The switch housing partially floats within the flashlight tube (12) to allow for a slight adjustment of the lamp (60) relative to the reflector to insure centering.

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DESCRIPTIONPORTABLE FLASHLIGHTField of the Invention

The present invention relates primarily to flashlights.

Background of the Invention

5 Various flashlight designs are known in the art. Flashlights include one or more dry cell batteries and in certain designs the batteries are arranged in series in a battery compartment of a barrel or tube which acts as a handle for the flashlight. Electrical energy from the  
10 batteries is generally conducted to a lamp or bulb at the front end of the flashlight through a switch mechanism positioned between the batteries and the lamp.

In various flashlight designs, the lamp is supported within the flashlight by a holder or spacer within the  
15 barrel and extends into the flashlight reflector. For optimal performance, the lamp must be properly aligned with the reflector. However, due to manufacturing and assembly operations and tolerances, after manufacture of the flashlight is fully completed, the lamp may be  
20 permanently misaligned with the reflector, resulting in degraded performance.

In addition, since under certain conditions the batteries can leak, it is advantageous to seal the battery compartment of the flashlight. On the other hand, since  
25 batteries can also release gases, it is advantageous to vent the battery compartment without allowing ingress of moisture, contaminants, etc.

Summary of the Invention

In a first aspect, the present invention is directed  
30 to a flashlight having an improved switch mechanism which contains a switch assembly with a forwardly extending neck

supporting the flashlight lamp. The switch housing partially floats within the flashlight barrel to allow for a slight adjustment of the lamp relative to the reflector, thereby insuring centering of the lamp and the lamp filament to the reflector. In a second aspect, the switch housing has a seal which seals the forward end of the battery compartment. In the third aspect, assembly of the flashlight is improved because of the alignment of the internal component parts.

10 Accordingly, it is an object of the present invention to provide a flashlight having improved means for alignment between the lamp and reflector.

It is another object of the present invention to provide a flashlight with a switch assembly having improved sealing characteristics.

15 It is a further object of the present invention to provide a flashlight having improved assembly through alignment of internal components.

Other objects and features of the present invention will become apparent from the following detailed description taken in connection with the accompanying drawings which disclose one embodiment of the invention. It is to be understood, however, that the drawings are designed for the purpose of illustration only and are not intended as a definition of the limits of the invention.

#### Brief Description of the Drawings

In the drawings, wherein similar reference characters denote similar elements throughout the several views:

Fig. 1 is a section view of the present flashlight;

30 Fig. 2 is an enlarged section view of the switch and bulb holder assembly of the present flashlight;

Fig. 3 is a side elevation view of the switch housing of the switch assembly shown in Figs. 1 and 2;

Fig. 4 is a front view thereof;

35 Fig. 5 is a rear view thereof; and

Fig. 6 is a top view thereof.

Detailed Description of the Drawings

Turning in detail to the drawings, as shown in Figs. 1 and 2, the present flashlight 10 has a barrel 12 having an externally threaded forward or front end and an internally threaded back or rear end. A head 22 is threaded onto the front end of the barrel 12. A face cap 14 is threaded onto the head 22. A lens 18, which may be clear or colored, is held in place in between the face cap 14 and a reflector 20. A face cap o-ring 16 positioned in a recess in the face cap 14 provides a resilient contact between the face cap 14 and the lens 18.

A head o-ring 24 seals the face cap 14 against the head 22. A barrel o-ring 26 rotatably seals the head 22 against the outside of the barrel 12.

As shown in Figs. 3-6, a switch housing 28 has a neck 30 and a top neck slot 32. Gussets 34 may be provided for strength purposes. A receptacle bore 36 extends vertically through the switch housing 28. The receptacle bore 36 is generally double-D shaped, except at the uppermost portion above a shoulder 42 where it is preferably round. An o-ring slot 38 is provided at the rear end of the switch housing 28. Contact slots or openings 40 extend through the front and back surfaces of the switch housing 28 on opposite sides of the receptacle bore 36.

Referring back to Fig. 2, a lamp holder 58 is slidably positioned within the neck 30 of the switch housing 28, and biased forward by a spring 54. A contact 56 is attached to the back end of the spring and a receptacle contact 52 is attached to the front end of the spring 54. The receptacle contact 52 has a protruding or pointed front end for making electrical contact with the base 61 of the lamp 60. An insulator 50 overlies the sides of the receptacle contact 52 and has a rear flange 53 which seats against the bulb holder 58.

A shoulder screw 44 extends through the neck slot 32 in the switch housing neck 30 and is threaded into the

bulb holder 58. A bushing 46 is positioned around the shoulder screw 44 in the neck slot 32, while a follower 48 is similarly positioned around the head of the shoulder screw 44 above the neck slot 32.

5 A lamp retainer 62 threaded onto the forward end of the lamp holder 58 secures the lamp 60 by clamping the lamp flange 63. A ground contact 66 extends from the switch housing neck 30 into the receptacle bore 36 and is electrically connected with the inside surface of the  
10 barrel 12. The lamp retainer 62, lamp holder 58, ground contact 66, barrel 12, contacts 56 and 52, spring 54 and barrel 12 are all electrically conducting materials, preferably metals.

A retaining ring 64 is placed within a groove on the  
15 inside surface of the barrel 12. The front flange 68 of the switch housing 28 seats against the retaining ring to longitudinally position the switch housing 28 within the barrel 12.

Referring still to Fig. 2, a generally cylindrical  
20 switch assembly 80 is positioned in the receptacle opening 36 of the switch housing 28. The switch assembly 80 has a lower switch assembly housing 82 and an upper switch assembly housing 84. An indexer 86 and a driver 88 are supported in the upper switch assembly housing 84 and  
25 cooperate with indexer ridges 90 therein. A return spring 100 biases the indexer 86 upwardly. Clip contacts 92 on opposite sides of the switch assembly 80 have protruding legs 94. A center contact ring 96 supported on a contact holder 98 alternately makes and breaks contact between the  
30 opposing clip contacts 92 as the driver 88 and indexer 86 are depressed to switch the lamp on and off. Alternate up and down movement of the center contact ring 96 with actuation of the switch assembly 80 results in a scrubbing action between the center contact ring 96 and the clip  
35 contacts 92. This scrubbing action improves reliability by helping to prevent a build up of contaminants on the center contact ring 96 and clip contacts 92. In addition

the center contact ring 96 turns incrementally each time the switch assembly 80 is actuated. This turning movement also improves reliability by avoiding excessive wear on any single area of the center contact ring 96. A switch seal 70 covers the switch assembly 80 and seals a round opening in the barrel 12 over the switch assembly 80.

At the bottom end of the switch assembly 80 is a set screw 104 and nut 102 which connect the ground contact 66 to the barrel 12 and also vertically position the switch assembly 80 within the receptacle opening 36.

With the switch assembly 80 installed within the receptacle 36, the front clip contact 92 touches contact 56 and the back clip contact 92 touches a battery contact 76 supporting a battery connector or spring 74. The battery contact 76 seals against the back face of the switch housing 28 by an o-ring 78.

Referring to Fig. 1, in the embodiment shown, two "D" size batteries or dry cells are contained within the battery compartment of the barrel 12, with the positive terminal of the front battery contacting the battery spring 74.

As best shown in Fig. 2, the outer circumference of the forward end (positive terminal end) of the battery 72 butts against the back surface rim 120 of the switch housing 28. This sets the spacing between the positive terminal 73 of the battery 72 and the switch housing 28. The battery spring 74 is selected and positioned within the switch housing 28 so that it contacts the positive terminal 73 of the battery 72 with sufficient, but not excessive force to avoid leakage caused by caving in the positive terminal.

A tail cap 112 threaded into the back end of the barrel 12 contains a lamp protector 114 cushioning a spare bulb or lamp 60. The lamp protector 114 is resilient. When removed from the tail cap 112, the lamp protector 114 may be spread apart to receive or release a spare lamp 60. When installed in the tail cap 112, the lamp protector 114



is held closed to cushion the lamp on all sides, e.g., on the glass, flange and/or base 61 of the lamp 60.

A tail cap spring 118 urges the batteries together and maintains them in contact with each other and the battery spring 74. A one-way seal 116 in the tail cap 112  
5 allows any build up of gases in the battery compartment to vent to the outside without allowing moisture, contaminants, etc. to enter the battery compartment.

With the flashlight design as shown and described  
10 above, the switch housing 28 partially floats within the barrel 12 to allow for a slight adjustment between the switch housing supporting the lamp and the reflector 20, to facilitate centering alignment of the lamp and reflector. As shown in Fig. 2, the switch housing 28 is  
15 positioned generally concentrically within the barrel 12, i.e., the centerlines or longitudinal axes of the switch housing 28 and the barrel 12 coincide. The reflector 20 is also generally concentric with the barrel 12 and switch housing 28. Accordingly, since the lamp 60 is held by the  
20 lamp holder 60 on the centerline of the switch housing 28, it is also generally centered within the reflector 20 through the alignment of the reflector 20, barrel 12, and switch housing 28. Due to manufacturing tolerances, the diameter of the switch housing 28 is necessarily nominally  
25 smaller than the inside diameter of the barrel 12. This would ordinarily allow the switch housing 28 to freely radially shift slightly within the barrel 12, thereby causing a misalignment of the lamp and reflector. However, the o-ring 106, together with the retaining ring  
30 64 allow the switch housing 28 to be slightly adjusted relative to the reflector to insure centering of the lamp with the reflector.

The batteries or dry cells may generate corrosive vapors or gases, which if not contained can corrode the  
35 switch assembly 80 electrical components, e.g., the clip contacts 92, center ring 96, etc. To prevent leakage of any gases from the battery compartment to the switch

assembly 80 and forward thereof, the housing o-ring 106 (and o-ring 78) seal the battery compartment from the switch assembly 80 and the front end of the flashlight.

Assembly is improved as the switch assembly 80 is placed within the receptacle opening 36 of the switch housing 28 and is positioned therein by the receptacle shoulders 42, and the switch housing 28 is positioned within the barrel by the retaining ring 64 and o-ring 106.

Thus, while one embodiment of the present invention has been shown and described, it will be obvious that many changes and modifications may be made thereunto without departing from the spirit and scope of the invention.

Claims

1. A flashlight comprising:  
a flashlight barrel;  
a switch housing; and  
5 means for adjustably positioning the switch housing within the barrel.
2. The flashlight of claim 1 wherein the means for adjustably positioning comprises a retainer on one side of the switch housing and a resilient member on the other  
10 side of the switch housing.
3. The flashlight of claim 2 wherein the resilient member comprises an o-ring.
4. The flashlight of claim 1 further comprising a back surface rim on the switch housing and a battery  
15 connector spaced apart from the back surface rim by a fixed preset dimension.
5. A flashlight comprising:  
a barrel;  
a reflector located adjacent one end of the  
20 barrel;  
a switch housing slidably positionable within the barrel and having a front flange and a rear o-ring slot;  
a retainer within the tube for positioning the  
25 front flange of the switch housing; and  
an o-ring positioned at least partially within the o-ring slot for sealing against the barrel.
6. The flashlight of claim 5 further comprising a neck attached to the switch housing and a lamp holder  
30 slidably contained within the switch housing neck.

7. The flashlight of claim 5 further comprising a one-way pressure relief valve for venting the barrel.

8. The flashlight of claim 6 further comprising a reflector sleeve extending from the reflector over the switch housing neck.

9. The flashlight of claim 6 further comprising a slot in switch housing neck and a set screw slider extending through the slot and engaging the lamp holder.

10. The flashlight of claim 6 further comprising a spring for biasing the lamp holder away from the switch housing.

11. The flashlight of claim 8 wherein the lamp holder is extendible through a central opening in the reflector.

12. The flashlight of claim 6 further comprising a switch assembly within the switch housing.

13. A flashlight switch comprising:

a tubular switch housing body having a front flange, a back flange, and a receptacle opening extending through the switch housing in between the front flange and the back flange, an o-ring groove in the back flange and a front contact slot through the front flange and a back contact slot through the back flange;

a tubular neck section co-axially and integrally attached to the front flange of the switch housing body around the front contact slot, the neck section having a neck slot;

a push button switch assembly contained within the receptacle opening and having a switch driver, a front contact aligned with the front contact slot and

10

a back contact aligned with the back contact slot, and means for making and breaking electrical continuity from the back contact to the front contact with actuation of the switch driver.

5        14. The flashlight switch of claim 13 further comprising a battery contact extending from the back flange and in electrical contact with the back contact.

15. The flashlight switch of claim 14 wherein the battery contact is a spring.

10        16. The flashlight switch of claim 13 further comprising a lamp holder slidably positioned within the neck, a spring in between the lamp holder and front contact slot, in electrical contact with the front contact and biasing the lamp holder away from the switch housing  
15 body.

17. The flashlight switch of claim 13 further comprising an o-ring in the o-ring groove.

18. The flashlight switch of claim 16 further comprising a set screw extending through the neck slot and  
20 attached to the lamp holder.

19. The flashlight of claim 16 further comprising a back cup contact secured in the back contact slot and interconnecting the battery spring and back contact, a front cup contact secured in the front contact slot and  
25 interconnecting the front contact and the spring, and a ground contact extending from the switch housing body into the neck and in sliding contact with the lamp holder.

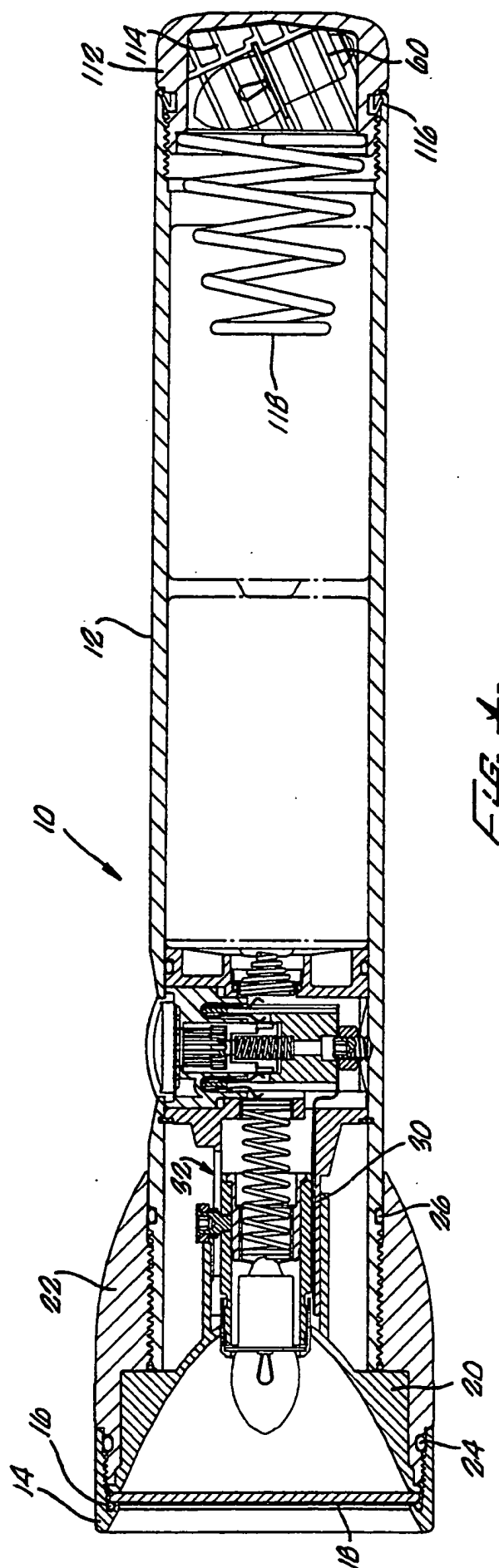


FIG. 1

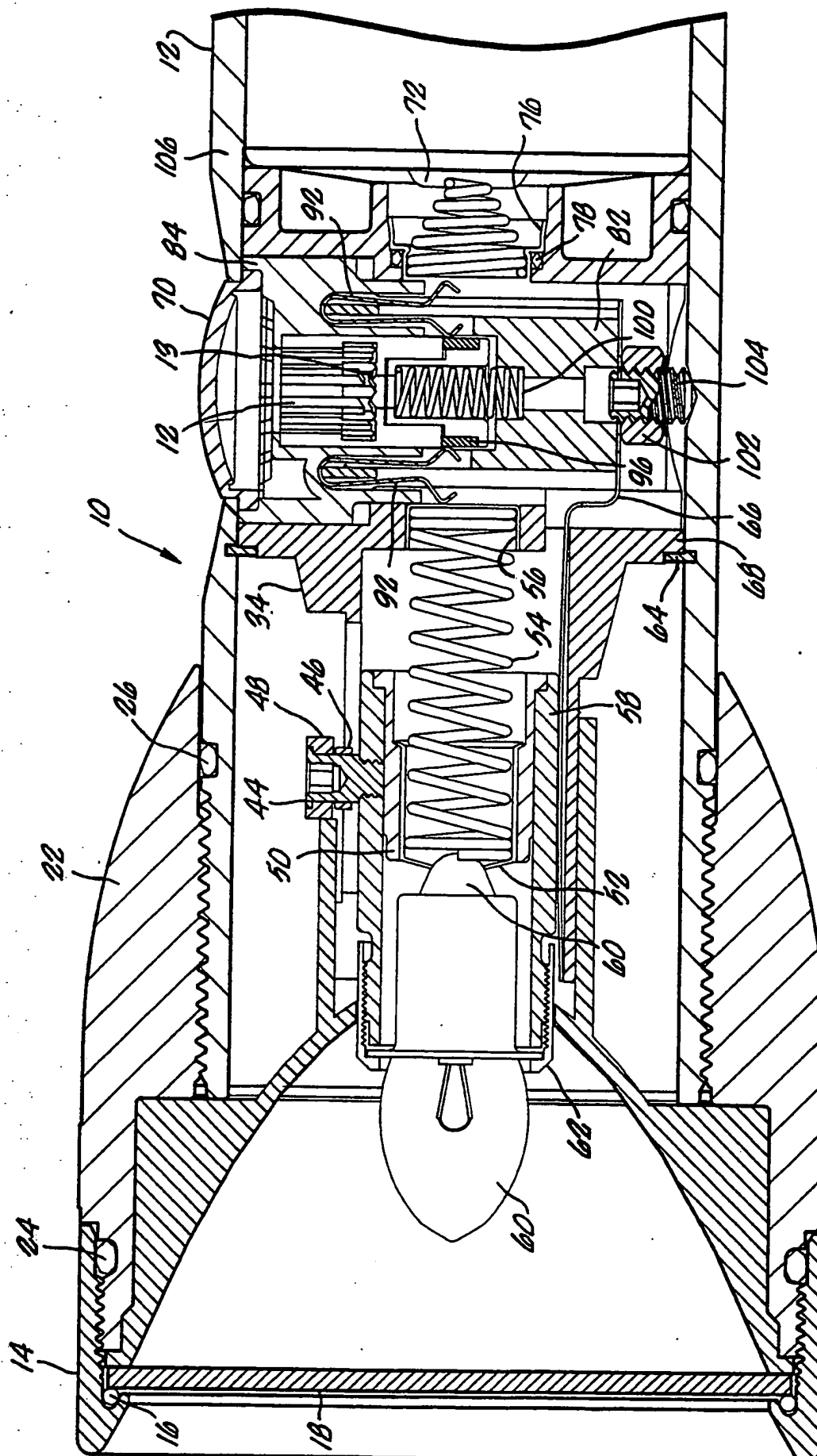
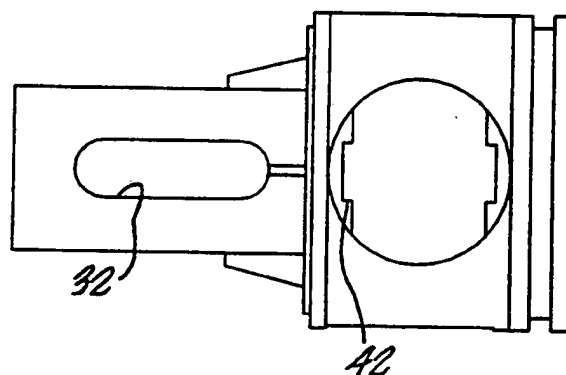
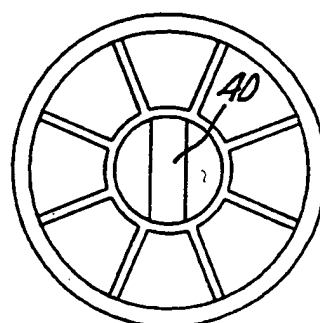
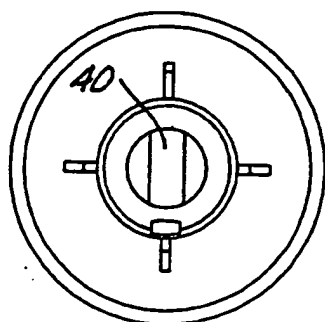
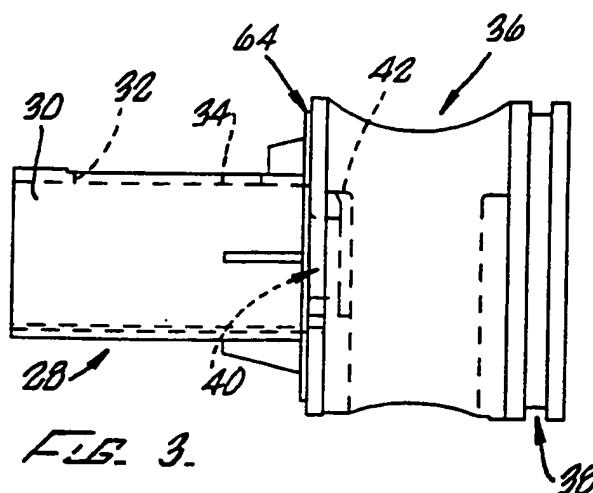


FIG. 2.





## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US93/01035**A. CLASSIFICATION OF SUBJECT MATTER**IPC(5) : F21L 7/00  
US CL : 362/205,158

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 362/157,202,204

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
NONE**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A, 4,843,526 (PRICE, III) 27 JUNE 1989 See figure 2-4, see also column 1, lines 47-55	1-2
A	US,A, 4,286,311 (MAGLICA) 25 AUGUST 1981 See entire document	1-19
A	US,A, 4,388,673 (MAGLICA) 14 JUNE 1983 See entire document	1-19
A	US,A, 4,527,223 (MAGLICA) 02 JULY 1985 See entire document	1-19

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

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